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Incomes and Living Standards of Older People

A Comparative Analysis

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Views expressed in this report are not necessarily those of the Department of Social Security or any other government department.

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Executive Summary

Background

This report is concerned with the incomes and living standards of older people in a comparative perspective. The report provides a new empirical analysis of the *incomes of* older people in eleven countries: the United Kingdom, Belgium, France, (West) Germany, Italy, Luxembourg, the Netherlands, Australia, Canada, Sweden, and the United States. This analysis is based on comparable income surveys held as part of the Luxembourg Income Study (LIS), and refers to the middle of the 1980s. The report employs the methods of analysis used by the Department of Social Security in its studies of *Households Below Average Income* (HBAI) in the United Kingdom.

The report also provides an analysis of *living standards,* defined to include the value of government provided health and education services, as well as disposable cash income. Attention is also given to the role of owner-occupied housing and liquid wealth. This analysis *of* living standards is restricted to a narrower range of countries - the United Kingdom, Germany, the Netherlands, Australia, Canada, Sweden, and the United States.

Earlier comparative studies have used measures such as the level of public spending, or the structure and level of benefits, or have compared benefit levels with wages or other indicators of average incomes. Comparisons of this sort show British social security policies for older people in an unfavourable light. These comparisons are not measures of true outcomes, however. Valid comparisons need to take account of all income sources of older people, as well as these other factors influencing living standards. In addition, measured incomes of older people and the rankings of different countries depend very much upon technical choices, and the selection of countries to be included in the comparisons.

Households below average incomes - main findings

The average incomes of older people in the United Kingdom are lower as a proportion of the average income of the total population than in most other countries in this study, apart from Sweden and Australia. Older people are best off on average in the Netherlands and France.

However, the LIS data show that there is a lower level of inequality in the incomes of the older population in the United Kingdom than in many other countries. This appears to be because the United Kingdom has a more effective benefit safety net than several other countries. This has major implications for the living standards of older people with lower incomes in the United Kingdom.

As a consequence of the more equal distribution of income among older people in the United Kingdom, the UK has a lower proportion of older people with incomes below 40 per cent of average income than other countries, apart from Sweden and the Netherlands. If the low income cut-off is set at 50 per cent of average income, then France also has a lower proportion of older people with low incomes.

Measuring living standards

This report adopts the approach to measuring living standards of an earlier study using the Luxembourg Income Study datasets (Smeeding, Saunders *et al.,* 1992). As

far as possible, their methodology has been replicated, although on the second wave of LIS data. We have included spending on the two major government noncash programmes - health and education. In the United States, we have also included employer-subsidised health care. The report also takes account of noncash housing subsidies, and imputed income from owner-occupied housing. This broader measure of resources is described as `final income'.

Table A provides estimates of the percentage of persons with incomes below 50 per cent of average income in the countries included in the analysis. The table shows that the proportion of persons with incomes below 50 per cent of the average is significantly lower using final income than when using disposable cash income. For the total population, the differences are greatest in Australia, Canada and the United Kingdom. The main effect of using the different income concept is to reduce the range of differences between countries.

The results for the United Kingdom indicate that there are fewer older people with relative low incomes than in any country apart from Sweden and the Netherlands. For the total population, Germany and Sweden have the lowest proportions with relative low income.

The major conclusion of this study is that international comparisons of the incomes of older people indicate that the determinants of living standards are complex and may differ significantly in different countries. Simple comparisons based on a limited number of indicators are potentially misleading. When living standards are defined more broadly, the differences in outcomes across countries are substantially reduced.

Table A: **Relative low income*** rates (%) **based on disposable income and final income concepts by benefit unit type**, mid 1980s**

I) Adjusted disposable cash income

Country	Single older people	Older couples	All older people	Total population
United Kingdom	6.8	9.2	8.1	11.9
West Germany	11.5	10.2	10.9	8.6
Netherlands	3.5	2.7	3.0	8.8
Sweden	8.2	2.0	4.9	7.2
Australia	39.4	23.6	30.0	16.7
Canada	14.8	8.6	11.3	13.3
United States	34.0	17.4	*25.3*	21.4

2) Adjusted final income 1 (health and education)

United Kingdom	2.9	2.6	2.7	6.3
West Germany	6.5	3.7	5.1	4.5
Netherlands	1.6	1.3	1.5	4.9
Sweden	1.7	0.5	1.1	5.0
Australia	8.2	5.0	6.8	7.1
Canada	6.8	3.1	4.6	7.6
United States	22.0	11.3	16.4	14.2

3) Adjusted final income 2 (health and education and housing)

United Kingdom	2.3	2.9	2.6	5.8
West Germany	7.2	4.6	5.9	4.9
Netherlands				
Sweden	–	–	–	–
Australia	4.9	4.9	4.9	6.4
Canada	5.4	1.9	3.4	7.3
United States	11.8	*6.5*	*9.0*	13.0

Notes: * Relative low income rates are calculated as the percentage of persons with adjusted incomes less than half the national mean adjusted cash disposable or final income. Adjusted using the McClements equivalence scale.

** Older people are women over 60 years of age and men aged over 65.

Source: Estimated from LIS data files

Chapter 1 Introduction

1.1 Objectives and outline of the study

How do the living standards of older people in the United Kingdom compare with those of older people in similar societies? What is the explanation for different outcomes in different countries? What is the policy or mix of policies that determines the relative living standards of older people in different countries?

The Department of Social Security commissioned the Social Policy Research Unit to undertake a research project that seeks to address these questions. This research looks at the incomes and living standards of older people in an international comparative perspective. In summary, this study analyses the level and distribution of income of older people in eleven countries - the United Kingdom, Belgium, France, (West) Germany, Italy, Luxembourg, the Netherlands, Australia, Canada, Sweden, and the United States. The analysis is based on data held as part of the Luxembourg Income Study (LIS), using the methodology employed by the Department of Social Security in its analysis of *Households Below Average Income* (HBAI). The study goes further, however, and incorporates the value of noncash benefits to households. These are benefits provided by governments in the form of health and education programmes, and the benefits derived from ownership of housing. The level and distribution of this broader measure of resources is analysed using the same methods applied to the income data and the effects of using this measure of living standards on the position of older people is assessed.

This report is concerned with the circumstances of persons who are of pension age or over in the United Kingdom - currently, 60 for women and 65 years of age for men. In other countries included in this study, pension ages differ, being either lower or higher than in the United Kingdom. Therefore, comparisons based on the UK pension age will include varying proportions of people still in work in some countries, while in other countries people who have actually retired will be grouped with those who are still working. Some inconsistencies are inevitable, however, when retirement policies differ across countries. In a study comparing the circumstances of older people in the United Kingdom with those of similar populations in other countries, the choice of the United Kingdom as the standard is logical.

Some aspects of expression should be noted. While the population group discussed are those of pension age or older in the United Kingdom, it was felt that it would be inaccurate to describe them as pensioners. This is because not all of these age groups receive a retirement pension in each country, nor in some countries are all pensioners in these age groups. Other possible categorisations include the `third age' (Johnson *et al.,* 1992), but this description is usually applied to include people below pension age and may not include those aged 75 years or over. The use of terms such as the `aged' or the `elderly' may seem to imply judgements about individuals' capacities that are not appropriate. A recent survey suggests that the majority of older people prefer to be described as `older people' (Walker, 1992), which led to the adoption of this term.

The report is structured as follows. The remainder of this Chapter outlines some basic issues involved in the measurement of living standards, and concludes with a discussion of background demographic and economic information on the countries included in this study, including a discussion of pension arrangements.

Chapter Two reviews the previous comparative literature that has discussed the distribution of incomes of older people. Most of these studies have sought to estimate the extent of `poverty' in different countries, where poverty is defined as incomes less than some percentage of the mean or median income in each society. This section summarises the findings of this comparative research, and identifies its implications for the United Kingdom.

Chapter Three presents the first main results of the research, showing the average incomes of older people compared to other population groups in each country. This includes a discussion of the distribution of the incomes of older people. Chapter Three then compares the proportions of the population in each country with incomes below different proportions of average income. These comparisons are presented separately for single older people and older couples, for those in different age groups, and for single older men and single older women.

Chapter Four discusses broadening the measure of household resources to include the effects of Government and other noncash benefits. Government noncash benefits to be included are those provided through the public health and education system in each country. Chapter Four also provides information on the housing arrangements of older people in different countries, concentrating on the level of owner-occupation, and discusses the value of liquid wealth held by older people in different countries. Chapter Five provides the results of using this broader measure of resources, and replicates the analysis already undertaken on incomes. Chapter Six draws all of this analysis together, highlighting the implications of these results for an assessment of the relative living standards of older people in the United Kingdom.

It will soon be apparent that in undertaking this research an enormous range of data has been used and generated, The methodologies used are quite complex, but in a sense all the results to be discussed flow from these methodologies. Indeed, it could be argued that the main conclusion of this report is that any assessment of the living standards of older people is fundamentally dependent on the assumptions made in the analysis and the methodology adopted. It is therefore important to provide a detailed discussion of the technical issues involved, and it is unavoidable that some of these issues must be discussed prior to the presentation of results. As far as possible, however, these technical issues have been relegated to the Appendices.

Appendix One provides a description of the HBAI approach. Appendix Two discusses the LIS datasets. Appendix Three describes the specific ways in which the HBAI methodology has been applied to these data. Appendix Four assesses the sensitivity of our results to the choice of equivalence scales. Appendix Five describes the general methodology for imputing noncash benefits. Appendix Six describes the particular imputation procedures used in each country.

1.2 Issues in research on living standards

The primary objective of this research is to assess the living standards of older people in the United Kingdom and compare them with older people in other societies. The first question arising from this is what do we mean by the term `living standards'. Figure 1.1 sets out a list of the issues that must be addressed in any study of these issues (Atkinson, 1985). In common with most previous analysis, we are interested in comparing the material living standards of older people in different countries, rather than whether older people feel more secure in one society, are more socially isolated in another, or are accorded more respect in another, for example. Nor are we concerned with subjective evaluations of income adequacy (Van Praag *et al.,* 1982).

Material standards of living are often treated as being synonymous with income (McKay, 1992). As noted by Atkinson (1989), however, living standards can be measured in terms of either income or expenditure, and a particular indicator may

either understate or overstate living standards in different cases. This study reviews and uses indicators that are broader than the *standard* income measures, although the extra dimensions included are given a monetary value. That is, we discuss the effects of using an expanded definition of income or resources. The extra dimensions discussed include the imputed value of Government benefits in kind - mainly health, education and housing services. In addition, the imputed value of owner-occupied housing wealth is discussed, as is the value of wealth in the form of public and private pension rights. The rationale and the methodology for doing this and the impact of using such expanded measures of resources are discussed later in this report.

Figure 1.1: **Issues in measuring living standards**

1.	What is the concept of living standards?
2.	What is the measure of resources - income, expenditure, or consumption? How is wealth taken into account?
3.	What is the unit assumed to share resources - household, family, benefit unit, or person?
4.	What is the unit of analysis - household, family, benefit unit, or person?
5.	How should we treat units of different types or composition (equivalence scales)?
6.	What is the period of assessment - current, annual or lifetime?
7.	How do we measure changes over time and differences between countries?
8.	What is the low income standard, and how is it defined?
9.	How is the duration of low income taken into account?
10.	What is the low income measure - head count or gap?

Source: Atkinson, 1985.

In analysing living standards, it is not only necessary to determine the concept of resources to be measured (Atkinson, 1985), but it is also necessary to use specific measures to compare standards of living. Quinn (1987) notes that there are a number of criteria that can be used to assess the adequacy of incomes available to older people. These include absolute measures - how do resources compare with what is needed to achieve a satisfactory life - and relative measures - how do the resources of older people compare with the rest of the population. Alternatively, one can measure replacement ratios - how do individual resources after retirement compare with those available to the same person or family before retirement. Such measures may be interrelated, in the sense that adequacy of incomes is often defined by reference to the average living standards of the whole population, or for individuals the resources necessary for a satisfactory life in retirement may be defined by reference to replacement ratios. In the empirical analysis later in this report, a number of measures are used. These include the proportion of older people below fractions of mean income, the percentage of older people and other groups in different quintile groups, the average incomes of older people as a percentage of mean incomes, and measures of income inequality within age groups. The literature reviewed below has used all of these and other measures.

It should be noted that much of the literature to be discussed refers to poverty measurement, as studies of poverty predominate in the comparative income distribution literature. This report also produces findings that are closely related to this previous poverty literature, in particular by estimating the proportion of the population in different countries with incomes below percentages of average income.

Social scientists in the United Kingdom have made very significant contributions to the international literature on poverty, particularly Atkinson, Sen and Townsend. Nevertheless, there is considerable controversy about the meaning and nature of poverty in the wealthy societies with which we are concerned. Much of this controversy is concerned with whether poverty is purely relative or whether it has an irreducible absolutist component, or whether these terms are at all useful. To review the full literature on this important topic is well outside the scope of this report. We would emphasise that our analysis simply refers to relative low income, and we do not provide any direct evidence on the extent of hardship or deprivation

among low income groups in the countries we are studying'. As a consequence, when discussing our own results, we do not use the term poverty, but refer to relative low income. However, other researchers using the same data and similar methods have described their results as showing estimates of poverty. Therefore, when discussing this previous research, we adopt their terminology.

1.3 The demographic and economic background

The eleven countries included in this study were chosen because of the availability of their data in LIS, and bearing in mind the broad similarity between the circumstances of older people in all these countries. In addition, while these countries are at broadly similar levels of economic development, they represent a rather wide range of statutory pension arrangements, and therefore give an indication of the outcomes of different pension regimes. Table 1.1 provides further detailed information - mainly compiled from OECD sources - that illustrates some of the similarities and differences between these societies. Much of the data has been chosen to show the circumstances of these countries in the middle of the 1980s, the period to which the LIS surveys refer. Other statistics show changes over time - either between the beginning and the middle of the 1980s, or trends since 1985.

The size of the population of these countries varies widely, from around 400,000 in Luxembourg to 240 million in the United States. The rate of population growth also varies widely, with Germany and Ireland showing negative growth in some periods, and the rate of growth being relatively very high in Australia, the USA and Canada. The proportion of the population 65 years of age and over ranges between 10.5 per cent in Australia and 17.5 per cent in Sweden, while the proportion 75 years of age and over ranges from around four per cent in Australia and Canada to seven per cent or more in Germany and Sweden. The `aged dependency ratio' - which is defined as the population 65 years of age and over as a percentage of the population of working age - varies between 14.1 per cent in Canada and 25.4 per cent in Sweden. Average life expectancy at age 60 years is highest for men in Canada and Sweden and lowest in Luxembourg; for women life expectancy at this age is highest in Canada and lowest in Luxembourg.

Table 1.1 also contains a range of economic statistics. National income as measured by Gross Domestic Product (GDP) per head is much higher in the United States than any other country. GDP per head was also high relative to that in the UK in Canada, Luxembourg, Sweden and Germany. The other countries are closer to the UK. It might also be noted that since the middle of the 1980s, the United Kingdom has enjoyed a higher rate of economic growth than these other countries, apart from Luxembourg and Belgium. The table also shows changes in consumer prices and in real hourly earnings, statistics which are of interest not only in relation to following general economic trends in each country, but also in relation to alternative indexation mechanisms for social security pensions. From either perspective, it is worth noting that the increase in real hourly earnings in the United Kingdom over the course of the 1980s is far higher than in any of these other countries, while there has been a real fall in hourly earnings in Australia and the United States. The other data in this table provide information on trends and levels of economic activity, including employment growth, and changes in the rate of unemployment. The financial statistics cover aspects of government spending and revenues, including the composition of tax revenue.

[1] For a discussion of the distinction between poverty and relative low income, see Veit-Wilson (1992).

Table 1.1: **Comparative** *statistics* ***of*** **countries** ***in*** **study**

	UK	**Belg**	*Fr*	*Ger*	It	**Lux**	Net	***Aus***	***Can***	*Swe*	*USA*
1. **Demography**											
Population *(m)* (1985)	*56.6*	*9.9*	*55.2*	61.0	57.1	0.4	14.5	15.8	*25.4*	8.4	*239.3*
Population growth											
Annual *average `Yo increase*											
1980-1986	0.13	*0.03*	*0.52*	-0.14	*0.24*	0.23	0.50	1.50	*0.90*	0.12	*0.95*
1986-1990	*0.29*	*0.33*	0.54	*0.54*	0.19	*0.74*	*0.65*	1.67	*0.89*	*0.59*	*0.96*
Per cent 65 years + (1986)	15.3	14.1	13.2	15.1	13.1	13.4	12.3	10.5	10.7	17.5	
Per *cent 75 years* + (1986)	*6.5*	*6.4*	*6.4*	7.0	*5.7*	*6.0*	5.1	*4.0*	4.1	*7.5*	*5.0*
Aged dependency ratio *in* 1980	*23.2*	21.9	21.9	23.4	*20.8*	*20.0*	*17.4*	14.8	14.1	*25.4*	17.1
Life expectancy *at age 60*											
Men	16.5	15.5	17.9	16.9	17.1	15.1	17.3	17.8	18.4	18.3	17.8
Women	21.0	*20.0*	23.0	21.4	21.3	19.8	*22.4*	*22.3*	23.4	*22.7*	*22.6*
2. **Economic**											
GDP per head adjusted by PPPs (1985)	100	*98*	105	112	*99*	123	103	108	139	116	151
Average annual *change in* real *GDP per* head											
1980-1985	1.86	*0.76*	1.02	1.26	1.14	*2.38*	*0.52*	1.72	*2.04*	1.76	*1.90*
1985-1990	*2.94*	*2.98*	*2.46*	2.34	2.84	*3.58'*	*2.02*	1.60	1.84	1.58	1.98
Change *in* consurner prices											
1980-1985	41.5	40.5	*58.0*	21.0	*90.3*	*39.8*	*22.7*	48.8	43.1	54.0	*30.5*
1 985-1992	*46.8*	16.5	*22.8*	14.5	46.4	15.1	11.1	*52.3*	24.4	35.1	*29.7*
Change in real hourly *earnings*											
1980-1985	+15.2	*-5.3*	*+5.7*	*+0.8*	+11.9	*n.a.*	*-2.2*	*n.a.*	-0.8	*-0.3*	*--0.4*
1985-1992	+15.8	*+6.4*	*+5.0*	+17.0	*+6.6*	*n.a.*	+7.1	*-8.7*	*+5.3*	+22.1	*-7.5*
Change in employment 1980 *to* 1990 *(%)*	*+6.7*	+1.3	+1.7	*+6.8-*	*+4.0*	*+20.0*	+4.0	+24.8	+17.3	*+6.5*	+18.6
Economic *activity rate for* males											
1980	*90.5*	*78.9*	81.7	84.3	*82.8*	*88.7*	*79.4*	*87.7*	*86.3*	*87.8*	84.7
1985	*88.6*	*74.5*	*76.8*	*82.3*	*79.3*	84.7	*75.8*	*85.9*	84.8	*85.8*	*84.0*
1990	*86.4*	*72.7*	*75.2*	*80.7*	78.1	*93.9*	*79.6*	86.1	*84.9*	*85.3*	*85.2*

cal *Table 1.!* **(continued)**

	UK	Belg	Fr	Ger	It	Lux	Net	.bus	Can	Swe	USA
Economic activity rate for females											
1980	58.3	47.0	50.6	50.6	39.6	39.9	35.5	52.1	57.2	75.3	59.7
1985	60.5	49.3	54.9	52.9	41.0	43.2	40.9	54.9	62.6	78.1	63.8
1990	65.1	52.4	56.6	56.6	44.5	50.8	53.0	62.3	68.2	81.1	68.1
Unemployment rate											
1980	6.4	8.8	6.3	2.9	7.5	0.7	6.0	6.0	7.4	2.0	7.0
1985	11.2	11.3	10.2	7.2	9.6	1.6	10.6	8.2	10.4	2.8	7.1
1990	6.8	7.2	9.0	4.9	10.3	1.2	7.5	6.9	8.1	1.5	5.4
1992	10.0	7.8	10.3	4.8	9.9	1.5	6.4	10.7	11.2	4.8	7.2
3. **Financial**											
Current receipts as % of GDP											
1980	39.9	49.3	44.5	44.7	33.0	53.3	52.8	30.7	36.2	56.3	30.8
1985	42.2	53.2	47.6	45.6	38.0	55.9	54.3	34.0	38.7	59.5	31.3
1989	39.7	48.5	46.5	44.6	41.1	n.a.	50.1	34.2	39.6	64.1	31.8
Current outlays as % of GDP											
1980	44.7	59.0	46.1	48.3	41.7	54.8	57.5	33.5	40.5	61.6	33.7
1985	46.1	62.4	52.2	47.5	50.8	51.7	59.7	38.7	47.1	64.7	36.7
1989	40.9	55.5	49.7	45.1	51.7	ma.	56.0	34.8	44.3	60.1	36.1
General government balance as % of GDP											
1980	-3.4	-9.2	0.0	-2.9	-8.6	n.a.	-4.0	-2.7	-2.8	-4.0	-1.3
1985	-2.7	-8.6	-2.9	-1.1	-12.5	ma.	4.8	-3.2	-6.8	-3.9	-3.3
1989	+0.9	-6.3	-1.5	+0.2	--10.2	n.a.	-5.2	-1.0	-3.4	+5.1	-1.7
Composition of taxation (1988)											
Personal income	26.6	32.0	12.1	28.9	26.8	24.4	20.5	45.9	36.7	38.8	34.7
Corporate income	10.8	6.9	5.2	5.3	9.4	17.3	7.3	10.6	8.6	5.2	8.4
Employee social security	8.5	10.7	12.5	16.2	6.6	10.4	19.0		4.6		11.4
Employer social security	9.5	20.6	27.2	19.1	23.4	13.6	16.9		8.4	24.3	17.0
Payroll			1.8		0.5			5.7		3.4	
Property	12.7	2.4	4.8	3.1	2.5	7.7	3.5	9.8	9.3	3.1	10.3
General consumption	16.5	16.2	19.7	15.6	15.2	14.2	16.5	9.2	15.5	13.3	7.5
Specific consumption	13.1	6.9	8.9	8.6	10.5	10.4	7.1	14.9	10.8	10.0	7.3
Total as % of GDP	37.3	45.1	44.4	37.4	37.1	42.8	48.2	30.8	34.0	55.3	29.8

Source: OECD, various years.

1.4 Pension systems

When considering the circumstances of older people, the structure of pension systems in each country is clearly of major significance. According to the OECD report on Reforming Public Pensions (1988a), pension systems can be classified into three types: (1) basic systems designed to cover the entire population, and providing flat-rate benefits funded out of general taxation revenue; (2) insurance systems, which cover workers and provide earnings related benefits financed out of contributions from employers and employees; and (3) mixed systems, which combine elements of the other two. Figure 1.2 shows the classification of the pension systems of the countries in this study. Australia is the only country to fall into the basic approach, while the United Kingdom, Canada, Ireland and Sweden provide support through a mix of mechanisms. The remaining countries predominantly have adopted the social insurance approach.

Figure 1.2: **Classification of pension systems in countries in report**

Basic	Mixed	Insurance
Australia (1)	United Kingdom (2+3 +5) Canada (1 +3) Sweden (1 +3+4)	Belgium (3) France (3+4) Germany (3) Italy (3) Luxembourg (3) Netherlands (3+4) United States (3)

Notes: 1. Universal.
2. Social assistance.
3. Social insurance.
4. Mandatory or quasi-mandatory occupational pensions.
5. Contracting-out possibilities.

Source: OECD, I988a, p.17.

Table 1.2 provides a summary of some of the main features of the major public and private retirement income systems in each country. This includes information on the pension retirement age, coverage and contribution requirements, the type of benefits, replacement rates, the method of financing, and pension uprating mechanisms. These details are provided as background to the results that follow.

Table 1.2: **Comparison of retirement pension arrangements in countries in study**

	UK	**Belg**	Fr	**Ger**	**It**	**Lux**	**Net**	**Aus**	**Can**	Swe	USA
1. Public pensions											
Pension retirement age											
Men	65	65	60	65	60	65	65	65	65	65	65
Women	60	60	60	65	55	65	65	60	65	65	65
Coverage of public pension	All residents	All workers	All workers	All workers	Employees, self-employed, some professionals	All residents	All residents	All residents	All residents	All workers	All workers
Contributions for full pension	Payment to value of 52 weeks of minimum contributions for around 90% of working life	45 years men, 40 years women	37.5 years for men and women	Value increases with years of contributions	Value increases per year, up to maximum at 40 years	Minimum requires 10 years paid or credited; maximum at 40 years; earnings related element increases per year	50 years, or all years since 1972 (2% deducted for each year missed)	10 years continuous residence	Minimum of 10 years, maximum at 40 years for universal pension; no minimum for earnings related element	30 years work	At least one quarter's coverage each year since 1950, or age 21, if later, and before age 62
Type of benefit	Flat rate, plus earnings-linked to average over working life	Linked to average earnings over working life	Linked to average earnings over best 10 years	Linked to average earnings over working life	Linked to average earnings over last 5 years	Flat rate, plus linked to earnings over working life	Flat rate	Flat rate	Flat rate, plus earnings linked to average over working life	Flat rate, plus income-linked	Linked to average earnings
Maximum replacement rate	40 %	60 %	50 %	50 %	80 %	64%	70 %	25 % for singles, 42% for couples	35 %	80 %	41 %
Financing	PAYG	PAYG	PAYG	PAYG	PAYG	PAYG	PAYG	PAYG	PAYG	PAYG	PAYG
Method of uprating	Prices, annually	Prices and living standards	Prices, twice yearly	Net earnings, annually	Prices - twice yearly & earnings annually	Price trigger & earnings	Earnings, twice yearly	Prices, twice yearly	Prices, various	Prices, annually	Prices, annually

Table 1.2 **(continued)**

	UK	**Belg**	**Fr**	**Ger**	**It**	**Lux**	**Net**	**Aus**	**Can**	Swe	USA
2. **Occupational pensions**											
Coverage	Voluntary, 50-60%	Voluntary, 5%	Compulsory, 80%	Voluntary, 65%	Voluntary, 5%	Voluntary n.a.	Voluntary, 50%	Voluntary, 60%	Voluntary, 45%	Compulsory, 100%	Voluntary, 55%
Type of benefit	Earnings related pensions	Earnings related pensions	Earnings related pensions	Lump sums, or earnings related pensions	Earnings related pensions	Earnings related pensions	Earnings related pensions	Lump sums or earnings related pensions	Lump sums or earnings related pensions	Earnings related pensions	Earnings related pensions
Financing	Funded	Funded	PAYG for share of pension < minimum; funded for share > minimum.	Mainly book reserve	Collective agreements: PAYG or funded; insurance companies, funded.	Mainly book reserve	Funded	PAYG or funded	Funded	Funded	Funded
Taxation	Contributions deductible, pensions taxable (not lump sums)	Contributions deductible, pensions taxable	Contributions deductible, pensions taxable	Employer contributions deductible, employees taxed below norm, pensions taxable	Contributions deductible, pensions taxable	Employer contributions deductible, employees deductible to ceiling, pensions taxable	Employer/ employee contributions partially/fully deductible, pensions taxable	Employer contributions deductible, pensions taxable	Contributions deductible up to a ceiling, pensions taxable	Employer contributions partially deductible, pensions taxable	Employer contributions deductible to ceiling, employee contributions taxable, pensions taxable

Source: Pestle u, 1992; Labour Research, 1993; OECD, 1988a.

Chapter 2 How Well-Off are 0 der People Review of the Literature

2.1 Types of comparative research

There is a considerable and growing interest in ranking social welfare outcomes in different countries, in order to assess how specific countries or particular types of arrangements perform. In the past, international comparisons of the outcomes of social policies have generally been undertaken from a number of rather different perspectives. One type of study has been sociological in nature, attempting to explain broad patterns of welfare state development (e.g. Wilensky, 1975; Esping-Andersen, 1990). These studies have attempted to identify the outcomes of different types of welfare states, with the measures used ranging from simple comparisons of aggregate spending levels to more sophisticated measures (for example, Esping-Andersen's `de-commodification index' and the `incorporation' measure developed by Bolderson and Mabbett (1992)). In these studies, the comparison of living standards has not been the central focus, although such outcomes have sometimes been used to rank the performance of different welfare systems (e.g. Palme, 1989).

A second type of study has been empirical rather than theoretical in its orientation, and has concentrated on issues such as the comparison of living standards usually in relation to specific population groups or particular social programmes (e.g. Bradshaw and Piachaud, 1980; Kamerman and Kahn, 1983; Ginn and Arber, 1992). In these studies, the measurement of outcomes has been the central focus.

Early studies had to rely on the use of aggregate statistics, such as the total level of public spending on older people or the average level of benefits paid to pensioners. More recent empirical studies have usually attempted to explore the issues in more detail and to generate new data, for example, by calculating the statutory benefit entitlements of persons and families in similar circumstances in different countries or by calculating benefit replacement rates (Aldrich, 1982; Bolderson and Mabbett, 1991). In addition, international bodies such as the International Labour Office (ILO), the Organisation for Economic Co-operation and Development (OECD), and the Statistical Office of the European Community have collected time series data from their members on the level and composition of social spending.

The limitations of the types of statistics involved in these comparisons are well known, but this has not stopped commentators from drawing strong conclusions about the effects of different benefit systems. Nevertheless, most of these comparisons do not show actual outcomes of social policies, but instead show inputs (spending levels), or describe how the system should be operating in a particular country rather than how it actually does operate (nominal replacement rates or model families).

While the comparative literature has been restricted to fairly crude measures, the national literature on the outcomes of social policies has developed in sophistication, primarily through the collection of detailed microdata on the distribution of income or expenditures or wealth (e.g. the Family Expenditure Survey in the United Kingdom). As the results of these surveys were published in particular countries, attempts were made to compare results across countries (Walker, Lawson and Townsend, 1984; OECD, 1988a). Such comparisons were generally very limited because the original data had been collected in different ways or the published results used different outcome measures (e.g. poverty lines), or different technical approaches.

Until recently, therefore, inte tional comparisons of income dis
been severely limited by I c ' comparal-' ross countries. T
been substantially remedie[d] , des elopm [1]983 of the Lti'e
Income Study (LIS) datab a ;et of broadly rcome sum
the Centre for Population, doverty and Po W--_
Luxembourg. There is alread cc s' ierable lite
e2.:`rinle, Bu' ---_:r Rainwatc , and Smeeuitig, i- viitctirii, i)91a;
Srr "° Ic` ii and O'Hia_~- Her, and Smeedir I990). It is now
cc - _c °1y a~ ed that LI , o [P]ost consist of comparable data
on income distribution (Barr, 1)90; O'Higgins, P and Smeeding. 1990;
Atkinson, 1990). In addition, the Europear Cc ilas sponsored a number
of specific studies comparing income dish" -ad poverty across Member
States (O'Higgins and Jenkins, 1990; Eurost_` ., %0; Deleek, 1991).

2.2 Comparing social **security** arrangements **for older** people

Comparisons of social security systems can take a number of forms. The simplest type of comparison is of the level of tublic spending. For example, Eurostat has recently asserted that `the ratio of soC [l] protection expenditure to GDP reflects the degree of commitment to social prote,ion' (1991, p.82). This in turn suggests that spending on older people reflects the degree of commitment to the protection of this group. Alternatively, comparisons can be made on the basis of the structure and level of benefits, either using `absolute' levels of benefits (adjusted by exchange rates or purchasing power parities), or by comparing benefit levels with wages or other indicators of average incomes.

When considering the living standards of older people in the Kingdom, many comparisons appear to show British social securit: I ties in an unfavourable light. For example, OECD figures on average pt .o expenditure per person 65 years and over are available up to 1984 (Varley, 1986). In 1984 the `absolute' level of government payments to older people was lower in the United Kingdom than in all other OECD countries exce"t Greece, Ireland and Portugal. The real purchasing power of public trnsfc s ■ older people in Britain was less than half that of transfers in Austria, F tone_ GI ty, Italy or the Netherlands, and just over half that in Sweden or the United Sti ,es (Varley, 1986).

British public pensions also appear ungenerous in relative terms. Measuring pension generosity as the proportion of GDP devoted to pensions divided by the proportion of the population aged 65 years or over indicates that among OECD countries in 1980, only Ireland provided a lower share of its nations ' ' -come in the form of public pensions for the retired, once account was taken c proportion of the population over 65 years (OECD, 1988a).

Other forms of analysis also appear to suggest that pension levels are comparatively low in Britain. Aldrich (1982) calculated the value of the pension as a percentage of average earnings in manufacturing, and found that pension levels in the UK were the second lowest of the 13 countries in the study for single retirees and lowest for couples. Palme (1989) used net replacement rates of pensions relative to average production workers' wages as a criterion for describing the British retirement pensions as `residual'. More recently, in a brief review of pension arrangements in the European Community, the journal *Labour Research* has argued that `state p: ision arrangements in the UK are an-- g the k st generous of any of the 12 rle[F]· [l] states. Only in I"& a do pensio[n] su[ff]er a [(t]eater fall in living standards ey retire on to [°] nsic [l] in some circumstances. per 'oners can be better o ' han here' ibour I.. earch, 1993, p.7)[.2]

All of these comparis=s hate a number of limitatirn . Comparisons of aggregate expenditures, ever adjusted in the ways sc are not measures of

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earnings.

outcomes, but only of inputs, and not even of all inputs to living standards. Such comparisons are potentially incomplete because of the differential contribution of private pension arrangements in different countries. Private pension payments are particularly significant in the United Kingdom. Private pensions have accounted for more than half of all pension receipts over most of the last two decades, being equivalent to nearly 57 per cent of all pension receipts in 1986-87 (Barr and Coulter, 1990). The growth of private pensions has reflected increases in average payments and increases in the proportion of the population in receipt of payments. The proportion of older men with incomes from occupational pension increased from 51 to 58 per cent between 1975 and 1985, with the proportion of women covered increasing from 15 to 23 per cent, to give a total increase over this period from 29 to 37 per cent (Barr and Coulter, 1990).

Because occupational and private pensions are relatively more significant in the United Kingdom than in some other OECD countries, the total incomes of older people in Britain will not be ranked so low. In addition, older people may have other sources of income, including earnings and investment incomes, and imputed rental income from owner-occupied housing. These considerations suggest that more valid comparisons should attempt to take account of all income sources of older people,[3] which in turn suggests that it is more useful to analyse income surveys rather than aggregate expenditure statistics.

2.3 Previous comparative studies

In the past decade there has been an increasing number of comparisons of the living standards of older people. Some studies were based on specific national surveys or comparisons of administrative statistics on the number of persons receiving social assistance (Walker, Lawson, and Townsend, 1984; Room, Lawson, and Laczko, 1989). A major conclusion of these studies was that there appeared to have been a long team decline in the level of poverty among older people in many countries, although it was not uncommon for poverty rates among older people to remain higher than among the population generally. These studies cannot be regarded as truly comparative, however, as different poverty lines and equivalence scales were used within each country, so that the poverty estimates were essentially non-comparable.

One of the first truly consistent comparative poverty studies was carried out by Beckerman (1979) for the International Labour Office (ILO). This was based on 1973 data for Great Britain, Australia, Belgium and Norway. The poverty line for each country was set at 100 per cent of personal disposable income per head in each country, adjusted by the equivalence scales implicit in the then Supplementary Benefit scale rates. Overall, poverty was found to be higher in Britain (13.4 per cent) than in Belgium (9.1 per cent) or Norway (10.2 per cent), but much less than in Australia (24.9 per cent) (Beckerman, 1979, p.25). Poverty rates for older people were generally much higher than for the overall population, ranging from 27.9 per cent in Belgium, 33.0 per cent in Norway, 35.3 per cent in Great Britain, to 67.1 per cent in Australia (Beckerman, 1979 p.42).

More recently, there have been a growing number of studies carried out for Eurostat, the Statistical Office of the European Communities. Teekens and Zaidi (1990) used a wide range of alternative methods of estimating poverty in the EC, mainly using expenditure data. Because only income data were available to them from the United Kingdom at the time of their report, they did not include the UK in their comparisons of poverty estimates. Deleeck *et al.* (1991) compare poverty rates for seven European countries or regions, but their results did not include the United Kingdom either.

[3] Nevertheless, the level of basic pension is of interest in that it provides the only or main income source for some of the elderly. The variations between countries in the level of basic public pensions and the proportion of the elderly with no other sources of income will exert a strong effect on assessments of the relative economic circumstances of the low income retired.

O'Higgins and Jenkins (1990) compare poverty rates across the European Community in 1975, 1980 and 1985. Poverty was defined as income less than 50 per cent of average equivalent income, using the OECD equivalence scales. [4] Their study does not separate out results for older people or other demographic groups. The average poverty rate (for persons) in 1985 was found to be 13.9 per cent, ranging from just over 7.0 per cent in Belgium to 28 per cent in Portugal. Poverty rates were very high - exceeding 20 per cent - in Greece, Ireland and Spain as well. The poverty rate in the United Kingdom was 12.0 per cent, about the same as in Italy (11.7 per cent), but more than in Germany (8.5 per cent). Apart from the poorer EC countries, UK poverty was exceeded by that in Denmark (14.7 per cent) and in France (17.5 per cent). O'Higgins and Jenkins' results suggest that poverty increased between 1975 and 1985 at the most rapid rate in the UK, which had the equal lowest level of poverty in 1975 (with the Netherlands).

A comparative study that does include the United Kingdom and the older population is Eurostat's *Poverty in Figures: Europe in the Early 1980s* (1990). Table 2.1 shows poverty rates in 1980 using poverty lines set at 40 per cent and 50 per cent of mean equivalent expenditure, using the OECD equivalence scales, and at the 40 per cent level in 1985. At the 50 per cent level in 1980, overall poverty rates in the UK were similar to those in Italy. Poverty was much higher in the poorer EC countries - Greece, Ireland, Portugal and Spain - and in France. At the 40 per cent level, the same rankings applied, although poverty in Italy did not fall to the same extent as in the UK. At both poverty standards, total poverty in the United Kingdom was somewhat below the Community average. In 1985, these rankings were different. At the 40 per cent level, total poverty in the UK was slightly higher than the 11 country average. Poverty had apparently increased by nearly half in the UK compared to falling poverty rates in Belgium, France, Germany, Greece and Spain, and basically unchanged levels in the other countries.

Comparisons of poverty rates among older people show a more complex picture. In general, rates for older people were estimated to be substantially higher than among the overall population. The exceptions to this are the Netherlands in 1980 and 1985, and Ireland in 1985. In 1980, the 50 per cent poverty standard produced rates ranging between 4 per cent in the Netherlands and 45 per cent in Portugal, with poverty among older people also being high in Spain, Ireland, Greece and France, followed at some distance by the United Kingdom. At the 40 per cent level, the rankings were similar, except that poverty in Italy was higher than in the UK.

Table 2.1: **Estimates of Poverty* in the European Community**, 1980 and 1985**

	1980 50% Poverty Line		1980 40% Poverty Line		1985 40% Poverty Line		Poverty Risk for Older People***	
Country	**Population**	**Older People**	**Population**	**Older People**	**Population**	**Older People**	**1980**	**1985**
Belgium	7.1	12.4	2.2	3.8	1.7	3.1	1.7	1.8
Denmark	7.9	18.8	3.4	8.1	3.5	9.3	2.4	2.7
France	19.1	30.4	10.7	18.9	8.4	12.8	1.8	1.5
Germany	10.5	14.3	4.7	6.4	4.2	6.0	1.4	1.4
Greece	21.5	31.2	12.2	19.7	9.7	16.2	1.6	1.7
Ireland	18.4	30.0	10.1	17.8	10.5	7.2	1.8	0.7
Italy	14.1	18.6	9.2	12.2	9.3	12.8	1.3	1.4
Netherlands	9.6	4.2	3.5	1.5	3.6	1.6	0.4	0.4
Portugal	32.4	44.9	21.5	23.2	21.8	32.6	1.5	1.5
Spain	20.9	32.9	12.2	21.4	10.7	13.5	1.8	1.3
United Kingdom	14.6	23.8	6.5	10.8	9.8	12.9	1.7	1.3
Average	16.0	23.8	8.7	13.1	8.5	11.6	1.5	1.4

Notes * Poverty is estimated by percentages of mean equivalent expenditure within each country.
** Figures for Luxembourg are not available.
*** The poverty risk for older people is defined as the ratio of the (40 per cent) poverty rate for older people to that of the total population.
Source: Eurostat, 1990.

These give a value of 1.0 for the first adult, 0.7 for each other adult, and 0.5 for each child.

The difference between the risk of poverty for older people and that for the population generally is summarised by the `poverty risk' figures, which are ratios of poverty rates among older people to those of the population generally. The average discrepancy between these poverty rates fell at the 40 per cent level between 1980 and 1985, with the fall being somewhat greater in the UK than on average. The discrepancy remained highest in Denmark.

Eurostat (1990) also estimated poverty rates where the poverty standards were set at 40 and 50 per cent of average expenditures for the Community as a whole. Using this approach, poverty was extremely high in Portugal, being nearly 60 per cent at the 40 per cent level and 70 per cent at the 50 per cent level. The other rankings were not greatly affected, although for 1980 the results for Italy were similar to those for France. The results for 1985, however, implied that poverty was lower for the population generally and for older people in France than in the UK.

2.4 Poverty estimates from LIS studies

Table 2.2 presents the results of studies based on LIS data which have estimated the extent of poverty among older people in the United Kingdom. In each study, the poverty line was set at 50 per cent of equivalent median income. Most of the studies are based on the first wave of surveys (1979-1984). Only two studies (Smeeding, 1992, and Rainwater, 1992) use the second wave (1984-1987) of survey data.

Estimates for 1979 show clearly that there is considerable variation in the poverty estimates for older people, which range from around 16 per cent to 42 per cent. Poverty rates for the overall population also vary (from around 8 per cent to over 13 per cent), but the variation in these estimates is noticeably less. Nevertheless, a general pattern emerges when comparing the UK's ranking in terms of poverty rates for older people. Table 2.3 presents, for each of the studies listed in Table 2.2, the ranking of poverty rate estimates for older people in each country. The first wave studies show that the poverty rate for the older people in the UK is consistently higher than in the other European and Scandinavian countries. Apart from Israel (which has a highest poverty rate for older people in two studies, but which appears in fewer comparisons), the only country which exceeds the UK is the USA (in around half the studies). Close behind are Canada and Australia, with Germany and Switzerland occupying the middle ranks. Norway and the Netherlands have relatively low rates of poverty among older people, but Sweden has the lowest poverty rate in nine out of ten studies.

Smeeding's and Rainwater's results apparently suggest a considerable improvement in the poverty rates for older people in the UK between 1979 and 1986. In both second wave studies, the UK has the second lowest poverty rate although, like the first wave studies, the poverty rate estimates differ substantially (1.5 and 7.4 per cent respectively). There appear to be a number of factors behind this apparent change.

It is well known that the economic position of older people in the UK has been improving for some time. Fiegehen (1986) estimated that pensioners' real incomes nearly tripled between 1951 and the mid-1980s, and their equivalent income per head rose from about 40 per cent to about 70 per cent of that of non-pensioners. Dawson and Evans (1987) also found that in 1970 fifty per cent of pensioners were in the bottom quintile of the equivalent income distribution, but that by 1985 this had fallen to 25 per cent; pensioners' incomes have correspondingly risen compared to those of non-pensioners - from around 60 per cent of average non-pensioner income in 1970 to just over 70 per cent in 1985. Both Fiegehen (1986) and Dawson and Evans (1987) also found a long term decline in the inequality of incomes among the aged.

Table 2.2: **Estimates of poverty among the older people in the United Kingdom using LIS data**

Study	**Year**	**Definition of older people**	**Unit of** Analysis	**Equivalence Scale**	**Overall poverty rate**	**Poverty rate for older people**	UK **Rank* for poverty among older people**
Smeeding *et al.* (1985)	1979	Head z 65	Family	LIS	8.8	18.1	5/9
Smeeding, Torrey and Rein (1987)	1979	Head z 65	Family	US poverty	9.7	29.2	8/8
Smeeding (1988)	1979	Head z 65	Family	n.s.	11.7	34.7	8/8
OECD (1988a)	1979	Head z 65	Household	OECD	8.8	18.0	7/8
Palme (1989)	1979	Head z 65	Family	LIS	n.a.	20.0	8/9
Rainwater (1990a)	1979	Head z 65	n.s.	n.s.	12.0	42.0	12/12
Hedstrom and Ringen (1990)**	1979	n.s.	Family	LIS	8.8	1. 16.2 2. 22.0	1. 5/7 2. 5/7
Smeeding, Saunders *et al.* (1992)**	1979	Head or spouse z 65	Family	Budget study	13.5	1. 50.3 2. 23.5	1. 7/7 2. 7/7
Kohl (1990)	1979	Head z 60	Household	LIS	8.8	15.6	4/4
Mitchell (1991a)**	1979	Head reached official retirement age	Family	OECD	8.2	1. 15.6 2. 17.8	1. 8/10 2. 10/10
Smeeding (1992)	1986	Head z 65	Family	LIS	n.a.	1.5	2/8
Rainwater (1992)	1986	Head z 60	n.s.	n.s.	8.6	7.4	2/13

Notes: n.s. = not stated.

* The lowest poverty rate is represented by 1.

** In Hedstrom and Ringen's study, the first number is the poverty rate among those aged 65 to 74 years, and the second number is for those 75 years of age and over. In Smeeding, Saunders *et al.* and in Mitchell's study, the first number is for single older people and the second number for older couples.

Table 2.3: **Rankings* of countries** by **poverty among older people using LIS data**

Study	United Kingdom	USA	Australia	Canada	Germany	Norway	Sweden	Nether-lands	Switzer-land	Israel	France	Italy	Luxem-bourg
Smeeding *et al.* (1985)	5	6	-	4	3	2	I			7			
Smeeding, Torrey and Rein (1987)	8	7	5	6	3	2	1		4				
Smeeding (1988)	8	7	5	6	4	3		2					
OECD (1988a)	7	8	3	6	5	2	1	–	4				
Palme (1989)	8	9	=3	7	=5	=3	1	2	=5				
Rainwater (1990a)	12	10	9	8	4	7	2	1	5	11	3	6	
Hedstrbm and Ringen (1990)	5	6		3	4	2	1		–	7			
	5	6		3	4	2	1		–	7			
Smeeding, Saunders *et al.* (1992)	7	5	6	4	3	–	1	2					
	7	6	3	5	4		1	2					
Kohl (1990)	4				3		1		2	--			–
Mitchell (1991a)	8	10	3	7	6	5	1	4	9		2		
	10	9	5	6	7	2	1	3	8	-	4		
Smeeding (1992)	2	8	6	5	7		3	1			4		
Rainwater (1992)	2	12	13	7	5	8	3	1	10	11	4	9	6

Notes: *The lowest poverty rate is represented by 1. In Hedstrom and Ringen's study, the first number is the poverty rate among those aged 65 to 74 years, and the second number is for those 75 years of age and over. In Smeeding, Saunders *et al.* and in Mitchell's study, the first number is for single older people and the second number for older couples.

More recent analysis (Department of Social Security, 1991c) shows that between 1979 and 1987 - nearly the period covered by the LIS surveys - the real net incomes of pensioners increased by 31 per cent on average, from £75.90 per week to £99.90 per week (in 1987 prices). Income from savings increased most (130 per cent), followed by occupational pension income (77 per cent), with total social security benefits increasing by around 17 per cent, and earnings falling by 20 per cent in real terms. Thus, rising real incomes probably contributed to improved relative circumstances for older people and a lower proportion with low incomes.

In addition, it should be remembered that all of these estimates are quite sensitive to the choice of equivalence scales, and differences in the scales used at different times may explain some of this change.

Other explanations are more technical and relate to differences between the 1979 and 1986 FES tapes in LIS. As discussed in Appendix Three, in the HBAI methodology it is usual to subtract employee contributions to occupational pension schemes in calculating net disposable incomes. This procedure has been followed in the 1986 LIS tape, but not in the 1979 tape. Because it is employees who make occupational pension contributions, while the retired and those not in work do not, this procedure will result in an apparent relative improvement in the position of older people. In our new analysis of LIS data that follows, we take account of this factor and have prepared alternative estimates, one following the standard HBAI approach, and the other adding employee contributions back into net cash income. This makes a small but perhaps significant impact on the extent of relative low income among older people. The proportion of all older people with incomes below 50 per cent of average income increases from 8.1 to 9.6 per cent, when employee contributions are added in.

Another technical factor is probably more significant but more difficult to adjust for. Since 1983, tax relief for mortgage interest payments has been available at source, (i.e. in lower mortgage repayments) rather than in lower income taxes. In the FES the effect of this change is to reduce the measured housing costs of people purchasing a house, but to increase their measured income tax. Since those receiving this tax relief will tend to be better off, this switch will appear to be progressive, when in itself it will have no effect on income distribution. This will tend to make all those without mortgages look relatively better off including most older people. The FES tape in LIS contains information on housing costs, but no similar information is available for any other LIS country. The only way to adjust for this change in the definition of income would be to model mortgage interest tax relief, but this would be a complex task. It should be noted, however, that our broader measure of well-being will effectively take this shift into account, since imputed income from housing is net of costs.

2.5 Explanations for variations in poverty rate estimates

The estimates of poverty rates for older people in the UK in Table 2.2 vary considerably between studies. In considering the reasons for these differences it is important to remember the issues identified in Figure 1.1. First, these different results may reflect different definitions of an `older person'. In most studies, a person is categorised as older if he or she belongs to a family or household where the head is aged 65 or over. The estimates provided by Kohl (1990) and Rainwater (1992) are based upon families/households where the head is 60 or over. Smeeding, Saunders *et al.* (1992) consider a person to be older if he or she belongs to a family where the head or spouse is 65 or over, whereas Mitchell (1991a) considers an older family to be one where the head has reached `official retirement age'. Clearly, these different definitions will have an influence upon poverty estimates, but there is considerable variation in poverty estimates even between those studies which employ a common definition of older people.

Another possible explanation for the variation in poverty estimates lies in the `income unit' selected for a particular study. Most of the studies take the family as

the income unit. Smeeding (1988) defines the family as ...all persons living together and related by blood, marriage, or adoption' (1988, p.3)), whereas the OECD study, for example, is based upon the `household' unit (usually consisting of those living at the same address who share common housekeeping, whether or not they are related). The income unit selected depends upon assumptions about the degree of income sharing between units in the same household. It is important to note that studies based on narrower units are likely to produce higher poverty estimates. (See Johnson and Webb, 1989, for an analysis of the effects of changing the income unit on estimates of the proportion of the population in Great Britain below half average income.)

Two further factors may crucially influence estimates of the proportion of older people living in poverty; the *level of the poverty line itself,* and the choice of *equivalence scale.*

2.5.1 The level of the poverty line

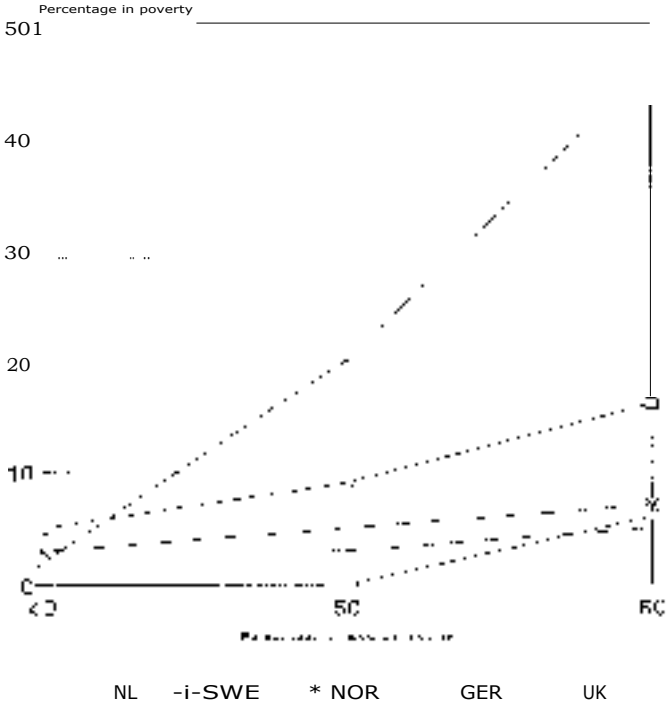
In Table 2.2, the estimated poverty rate for older people is based on a `poverty line' set at 50 per cent of median equivalent income. However, there is no single level of income which commands universal support as a poverty line. Although most studies using LIS data have employed a poverty line set at 50 per cent of median income, this definition is essentially arbitrary. Official poverty lines, or poverty lines implied by social assistance rates, display considerable variation between countries. For example, Buhmann *et al.* (1988) estimated that the poverty lines used in the USA fell around 39 per cent of median equivalent income in 1979, whereas the Swedish poverty line was around 62 per cent of equivalent median income (1988, p.17).

It is useful to examine the impact of alternative lines on the poverty rate for older people. Figures 2.1a and 2.lb, derived from Palme (1989), compare estimates of poverty rates for older people in various countries between 1979 and 1983, according to poverty lines set at 40, 50, and 60 per cent of median equivalent income. (For purposes of clarity, the countries have been divided into two groups, although the UK is included in both charts.) When the poverty line is set at 60 per cent median equivalent income, the UK has the highest poverty rate for older people (46 per cent) of all the countries included. However, at 50 per cent of median income, the UK's poverty rate falls dramatically, to 20 per cent, and falls further (to only 2 per cent) when a poverty line at 40 per cent is used.

There appears to be a significant clustering of older families in the 40 to 60 per cent median equivalent income range, at least to a greater degree than in the other countries included in Figure 2.1. Palme (1989) attributes this clustering to the relatively low level of the (flat rate) UK state retirement pension, which he estimates at around 40 per cent of median equivalent income in 1979. The fact that poverty is comparatively low at the 40 per cent level probably reflects the effectiveness of the then Supplementary Benefits scheme.

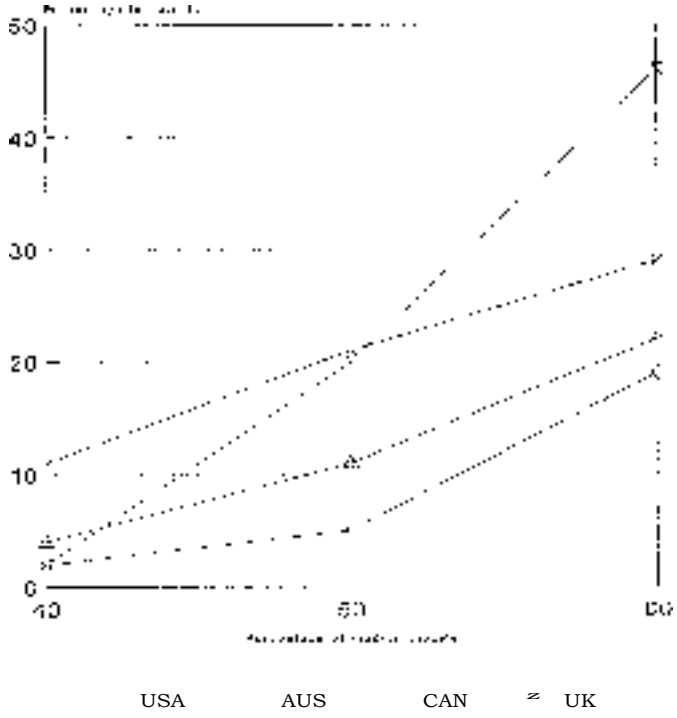
Figures 2.2a and 2.2b (derived from Smeeding, 1992) repeat Figures 2.1a and 2.lb for eight countries included in the second wave (1984-1987) of LIS survey data. It should be stressed that although Smeeding (1992) follows the same general methodology as Palme (1989), there may be minor differences in their approaches. Nevertheless, comparing Figures 2.1 and 2.2 may provide an indication of whether the sensitivities noted above also apply to more recent years. In Figure 2.2, the UK's poverty rate for older people is far less sensitive to the choice of poverty line than in Figure 2.1, suggesting a reduction in the degree of clustering between 40 and 60 per cent of median equivalent income. In contrast, Australia's poverty rate shows the greatest sensitivity, increasing dramatically between 50 and 60 per cent of the median.

Figure 2.1a: Poverty among older people according to three poverty lines, 1979-1984



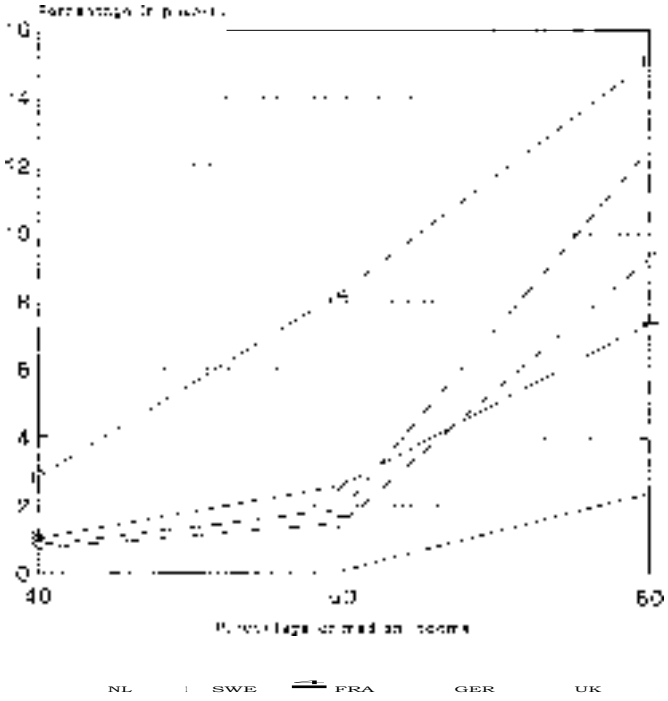
Poverty lines set at percentage of median equivalent income.
Source: Palme (1989)

Figure 2.lb: Poverty among older people according to three poverty lines, 1979-1984



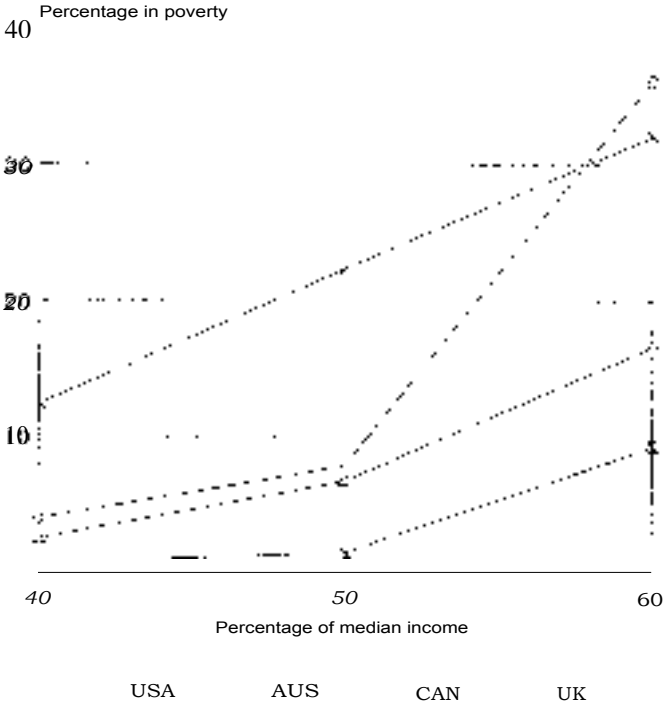
Poverty lines set at percentage of median equivalent income.
Source: Palme (1989)

Figure 2.2a: Poverty among older people according to three poverty lines, 1984 4987



Poverty lines set at percentage of median equivalent income.
Source: Smeeding (1992)

Figure 2.2b: **Poverty among older people according to three poverty lines, 1984-87**



Poverty lines set at percentage of median equivalent income.
Source: Smeeding (1992)

The above discussion highlights the fact that poverty estimates (when measured by a headcount) can be particularly sensitive to the level of the poverty line. Estimating poverty rates according to different poverty lines, as in Figures 2.1 and 2.2, is one method of testing the sensitivity of the result. An alternative is to measure the *poverty gap* rather than the poverty headcount. The poverty gap is usually defined as the average income shortfall from the poverty line for a particular family type, and is usually expressed as a percentage of the poverty line. (For an example of the poverty gap concept being used in a comparative context, see Mitchell, 1991a).

Although the poverty gap in theory overcomes many of the sensitivity problems associated with the headcount measure, attempting to estimate poverty gaps for different family types in a comparative context may itself prove problematic. Mitchell (1991) notes considerable variation in poverty gap estimates for each family type when the level of the poverty line is varied, and cites two main causes for this variation:

> First, the very small cell counts for some family types (especially the aged) at 40 per cent and 50 per cent intervals exaggerate the average size of the poverty gap. In particular, it is families which report negative or zero disposable incomes which affect the results at these lower levels. Second, countries which successfully reduce the poverty gap andlor have a relatively small number of families in their surveys, have lower counts across the [poverty line] range which again contributes to the unreliability of the poverty gap estimates.
> (1991, p.69)

Because of this unreliability, Mitchell only presents estimates of the poverty gap by family type using a poverty line set at 60 per cent of median equivalent income. Using this poverty line, there are a greater number of observations for each family type in each country and hence, argues Mitchell, less of a problem of under-reporting of income and sampling error. Although the poverty gap avoids many of the problems associated with the headcount measure, it may be of limited use in certain circumstances. The question of which poverty measure to use - headcount or poverty gap - will depend upon a number of considerations, not least the objectives and questions of the research itself.

2.5.2 The choice of equivalence scale

In order to compare the incomes of families or households of different size and composition, it is first necessary to adjust their income to take account of differences in needs. This is commonly achieved using equivalence scales. A variety of methods have been used to derive such scales, and a large number of alternative equivalence scales have been suggested (see Whiteford, 1985). Equivalence scales vary in their degree of sophistication. Some specify a single weight for each additional person in a family while some also specify a lower rate for children. Others specify different weights according to the age of child. In addition, some scales incorporate diminishing weights with increasing family size.

Following Buhmann *et al.* (1988), it is possible to summarise the differences between alternative equivalence scales using the following expression:

$$E = Y ln^{e}$$

where E is equivalent income, Y is disposable income, n is the number of persons in the family, and e the `equivalence elasticity'. If e = 0 then no adjustment is made for family size, whereas e = 1 results in per capita adjustment. Different values for e therefore correspond to different estimates of economies of scale. Low equivalence elasticities can be expected to increase the needs of smaller families in relation to larger families, or to put it another way, to increase the relative chances of small families and especially single persons) being classified as poor.

What impact does this have on comparative estimates of the extent of poverty among older people? In an analysis of how the choice of equivalence scale can affect poverty estimates in comparative studies, Buhmann *et al.* (1988) selected four values for *e* (0.25, 0.36, 0.55, and 0.72) which correspond to typical equivalence scales derived by each of the main methods. Table 2.4 and Figures 2.3a, 2.3b, 2.4a and 2.4b, derived from Buhmann *et al.* (1988), show the extent of poverty among single older women and men and older couples respectively, using the four alternative equivalence scales, for selected countries between 1979 and 1983.

For all countries the poverty rate for single older women decreases as the equivalence elasticity increase. However, poverty estimates for some countries are more sensitive than others to the choice of equivalence scale, and this is particularly noticeable for higher values of *e.* Many of the equivalence scales used most commonly in comparative research, such as the OECD scale, fall within this range. While some countries experience relatively little variation in the poverty rate (the Netherlands, Sweden and Germany), others experience a significant drop in their poverty rates (Australia, Canada, and the UK) as the equivalence elasticity increases towards 0.8. Moreover, the number of lines intersecting in Figure 2.3 indicates the extent to which the adoption of alternative equivalence scales can affect the ranking of each country.

Table 2.4: **Poverty rates[1] among older people,** effects of **alternative equivalence** scales, **1979-1982**

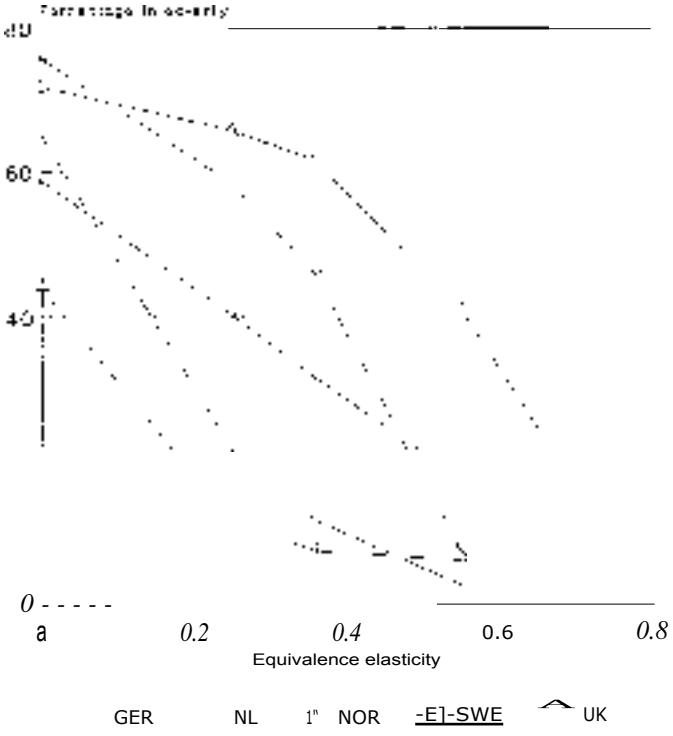
	Family **type and income concept**[2]								
	Single men			**Single women**			**Couples**		
Country	**D**	**SUBJ**	**STAT**	**D**	**SUBJ**	**STAT**	**D**	**SUBJ**	**STAT**
United Kingdom	71.8	59.4	13.8	71.9	65.8	12.9	43.0	37.0	13.5
Australia	58.8	53.1	5.1	63.5	54.4	5.0	37.8	27.4	7.1
Canada	57.3	46.0	15.2	62.1	52.9	16.2	24.6	17.9	8.8
Germany	36.4	25.4	11.4	58.8	40.1	10.2	17.1	11.4	6.7
Israel	43.3	28.1	13.3	67.3	52.5	30.5	34.8	29.3	21.3
Netherlands	34.6	10.0	4.8	43.8	11.0	5.9	5.8	4.2	4.1
Norway	60.7	46.2	10.5	75.8	58.4	5.6	17.6	5.9	2.4
Sweden	*54.9*	*28.3*	1.2	65.1	21.2	0.0	2.6	1.9	1.5
Switzerland	57.9	47.1	9.9	63.9	42.7	11.3	10.3	7.4	4.9
USA	56.1	48.3	26.8	61.3	52.2	30.5	21.6	17.4	13.5

Notes: (1) `Poverty rates' are the proportion of persons in each family type with disposable incomes below half the median income

(2) D is disposable income unadjusted by an equivalence scale; SUBJ is an equivalence scale derived from the `attitudinal approach' with very high economies of scale (elasticity of 0.25); STAT is derived from expert statistical studies and have low economies of scale (elasticity of 0.72)

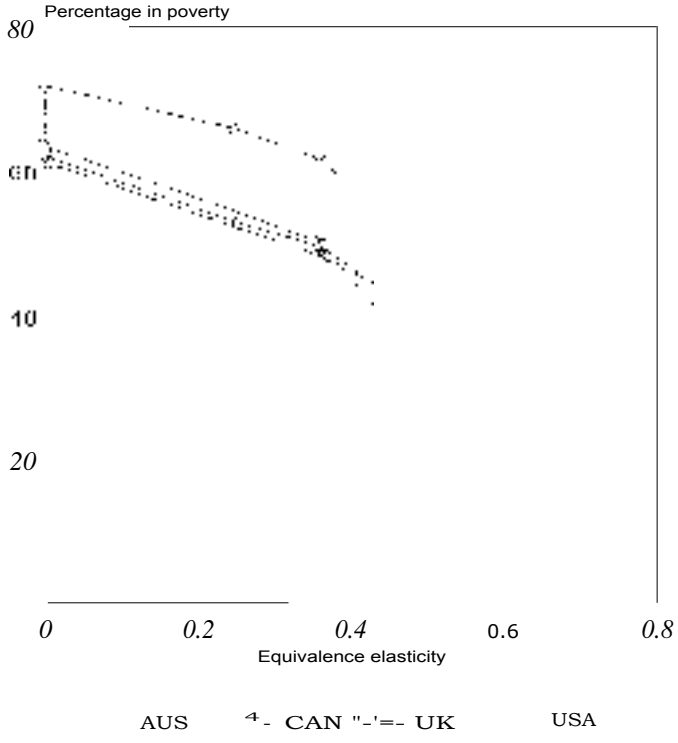
Source: Buhmann, Rainwater, Schmaus and Smeeding, 1988

Figure 2.3a: Poverty rate for single older women according to alternative equivalence scales, 1979-84



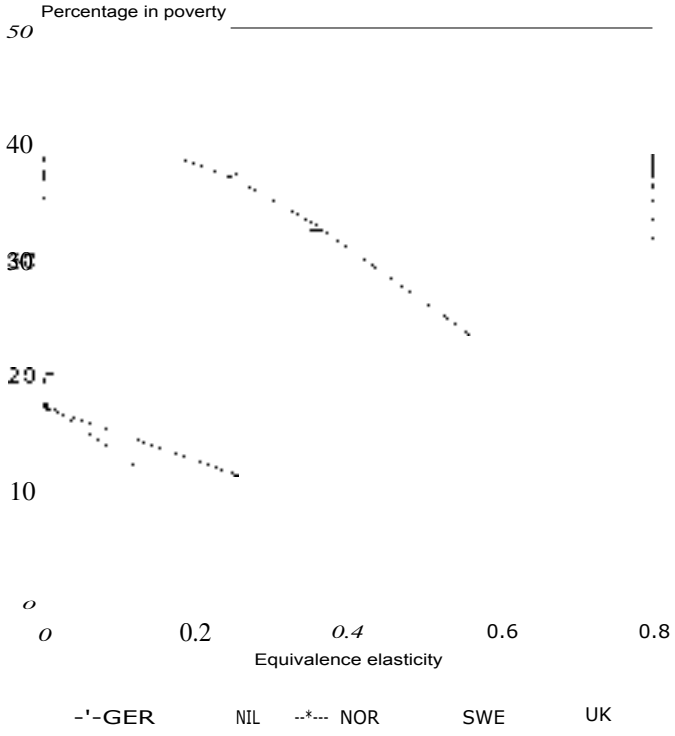
Source: Buhmann et al (1988)

Figure 2.3b: Poverty rate for single older women according to alternative equivalence scales, 1979-84



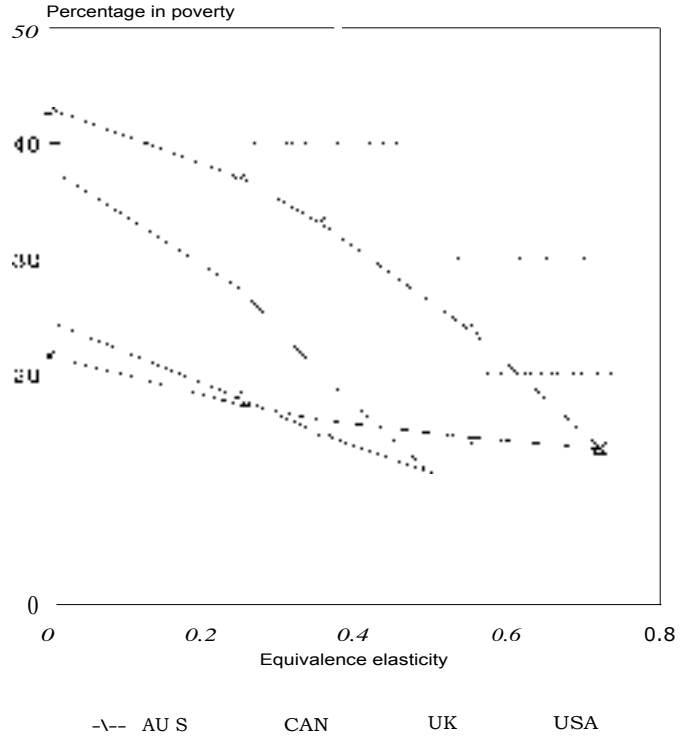
Source: Buhmann et al (1988)

Figure 2.4a: **Poverty rates for older couples according to alternative equivalence scales, 1979-84**



Source: Buhmann et at (1988)

Figure 2.4b: Poverty **rates for older couples according to alternative equivalence** scales, **1979-84**



Source: Buhmann et at (1988)

The choice of equivalence scales has much less impact on poverty rates for older couples in most countries compared to the results for single older women. However, the poverty rates for Australia and the UK are noticeably more sensitive to the choice of equivalence scales than are those of other countries. For the UK, this may reflect the clustering of older individuals around the poverty line noted earlier.

This discussion underlines the crucial importance of the choice of equivalence scale in determining both poverty rate estimates and rankings for countries. Since most older people live either alone or as couples, the choice of equivalence scale may have a significant effect on poverty estimates, particularly if there is a clustering of individuals at the lower end of the income distribution.

2.6 Income inequality among older people

The relative economic status of older people can be assessed using a range of measures apart from poverty rates. Table 2.5 shows OECD estimates of the incomes of older people relative to mean incomes and Gini coefficients for different age groups, using LIS data for around 1980. Looking first at adjusted disposable incomes as a percentage of the mean, in most of these countries the highest level of prosperity is enjoyed by the 55 to 64 year age group. The exceptions to this are the United Kingdom and Germany, where the highest average incomes are for those aged 45 to 54 years.

Generally speaking, older people in the United Kingdom are shown to be least well-off relative to average incomes, with 65 to 74 year olds having equivalent disposable incomes about three-quarters of the average for the entire population, and those over 75 with incomes of about two-thirds of the overall average. Sixty-five to seventy-four year olds are relatively most prosperous in Switzerland, Norway and the United States, and those over 75 years are relatively most advantaged in Switzerland and the USA. Patterns of inequality by age apparently differ significantly across countries. In Switzerland and the United States, there is greater inequality among the older population - as measured by the Gini coefficient - than among the population generally. This is also true for those aged 65 to 74 years in Canada and Norway. For all other countries and age groups, the distribution of income is more compressed for older people than for the population generally, except for 65 to 74 year olds in the UK, where the Gini coefficient for this group is the same as for the general population. Older people in Sweden show an extremely compressed income distribution, where the Gini coefficient is much less than that for the whole Swedish population, which has by far the lowest Gini coefficient in any case. Inequality among the very old appears to be greatest in the United States, Switzerland and Germany, although inequality generally is high in Germany and the United States.

Table 2.5: **Inequality of adjusted disposable incomes by age group in selected countries around 1980**

a) Adjusted disposable income as proportion of mean

	Age group								
	0-24	24-34	35-44	45-54	55-64	65-74	75+	**Total**	**SD**
Australia	095	0.92	0.92	1.17	1.22	0.87	0.81	1.00	0.14
Canada	0.87	0.96	0.96	1.11	1.15	0.94	0.81	1.00	0.11
Germany	0.86	0.88	0.94	1.30	1.07	0.84	0.77	1.00	0.17
Norway	0.81	0.96	0.99	1.04	1.18	1.01	0.79	1.00	0.12
Sweden	0.86	1.00	0.98	1.12	1.17	0.96	0.78	1.00	0.13
Switzerland	0.81	0.93	0.92	1.05	1.27	1.07	0.91	1.00	0.14
United Kingdom	0.99	0.97	0.97	1.20	1.17	0.76	0.67	1.00	0.18
United States	0.77	0.93	0.95	1.13	1.21	0.99	0.84	1.00	0.14
Mean	0.87	0.94	0.96	1.14	1.18	0.93	0.80		–
SD	0.07	0.03	0.02	0.08	0.05	0.09	0.06		
b) Gini coefficient for age group									
Australia	0.33	0.31	0.28	0.26	0.29	0.28	0.27	0.30	0.03
Canada	0.33	0.30	0.29	0.29	0.30	0.31	0.29	0.30	0.02
Germany	0.30	0.27	0.32	0.45	0.34	0.30	0.34	0.36	0.06
Norway	0.30	0.25	0.21	0.23	0.23	0.25	0.23	0.24	0.03
Sweden	0.24	0.21	0.19	0.22	0.20	0.14	0.13	0.21	0.06
Switzerland	0.31	0.27	0.25	0.30	0.30	0.41	0.34	0.30	0.05
United Kingdom	0.28	0.26	0.25	0.25	0.25	0.27	0.24	0.27	0.01
United States	0.35	0.31	0.30	0.30	0.33	0.34	0.36	0.33	0.02
Mean	0.30	0.27	0.27	0.29	0.29	0.30	0.29	0.29	
SD	0.03	0.03	0.04	0.07	0.05	0.07	0.07	0.04	

Source: OECD. 1988a

2.7 Summary

To summarise the literature discussed above, there is a range of evidence that average levels of spending on older people in the United Kingdom were low in the period up to the mid 1980s. Replacement rates offered by retirement pensions are also relatively low. Comparisons of poverty rates for older people around 1980 suggest that poverty was relatively high in the UK, although the UK's performance appears to have improved substantially by the mid 1980s. The average levels of income of older people compared to those of the population in general also fell towards the lower end of the range of countries.

It should be emphasised, however, that these results reflect some specific limitations in the available data and also a number of technical decisions taken in comparing living standards. The LIS data have included more countries outside the European Community than in it, including Norway and Sweden, where poverty rates for older people are particularly low. Within the European Community, the UK's poverty performance appears to have been somewhat better, although this is mainly because of the poor performance of Greece, Ireland, Portugal and Spain. It can also be noted that the French system appears to perform much better when measured using LIS data than in the studies by Eurostat.

Having made these rankings, it should be noted that these results are particularly affected by the choice of the poverty standard to be applied and the equivalence scales used.

In summary, therefore, the great bulk of previous evidence appears to suggest that older people in the United Kingdom have not been as relatively well-off as older people in similar wealthy societies. The main factor identified has been the relatively low level of public spending on cash transfers for older people and the low replacement rates offered by these benefits. In the analysis that follows, we test these conclusions on the more up-to-date data. By broadening the measure of living standards, we also test whether these conclusions stand up to a more comprehensive analysis.

Chapter 3 The Relative Incomes of Older People and their Distribution - A New Analysis

3.1 Data sources and methodology

The Luxembourg Income Study (LIS) database is a set of comparable income surveys held at the Centre for Population, Poverty and Policy Studies (CEPS/INSTEAD) at Walferdange, Luxembourg. Details of the surveys and countries to be included in this analysis are set out in Table 3.1[5]. The European Community (EC) countries to be included are the United Kingdom, Belgium, France, (West) Germany, Italy, Luxembourg and the Netherlands, and outside the EC, countries analysed are Australia, Canada, Sweden and the United States. The dates of the surveys included in LIS range between 1984 in France and Germany to 1987 in the Netherlands, Canada and Sweden, with the other countries falling between.

There are other countries for whom results could have been included - Austria, Israel and Poland - but it was considered that differences in economic or social circumstances or in the degree of policy interest did not warrant their inclusion. There are also surveys for Ireland and Norway available in LIS, but these do not contain the information required for the application of the HBAI methodology, and could therefore not be included. In addition, LIS holds a number of earlier income surveys for many of the countries included in this analysis. This 'first wave' of LIS surveys were undertaken around 1979 or 1980, or roughly five years earlier than the second wave. Results of previous studies using the first wave surveys have been discussed above. It is not possible, however, to undertake the HBAI analysis on the first wave of surveys. This is because the HBAI approach requires information on a personal as well as a household basis, and the required personal data are also not available for the earlier surveys.

The size of the surveys included in the LIS data sets vary widely - from around 2,000 households in Luxembourg to 12,700 households in France. This suggests that results for some small sub-groups in Luxembourg should be treated with caution. In addition, there are gaps in the population coverage affecting all countries. These are household surveys and as such consequently do not include the homeless or those institutionalised. In countries where the sample is drawn from the electoral register, those not on the register will be excluded. In Canada and Sweden, some far northern rural residents (Inuits, Lapps) may be undersampled. Generally, the income data in these surveys cover annual incomes, but in the United Kingdom and German surveys, current income data were collected, and annual data had to be projected from this base. In addition the French survey data are taken from income tax records to which a sample of low-income non-taxpaying units is matched and reweighted to national population totals.

This study is unique in its application of the methodology used by the *Households Below Average Income* analysis to the LIS data. The HBAI methodology was introduced following the report of a Technical Review of the previous Low Income Statistics (DHSS, 1988). The most recent HBAI publication was in 1994 and covers the period 1979 to 1991/92 (DSS, 1994). Appendix One of this report contains a detailed description of the HBAI approach, and Appendix Three describes how we applied the methodology to the LIS data.

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[5] Further information on the LIS database is provided in Appendix Two of this report.

Table 3.1: **Overview of LIS datasets included in analysis**

Country	Dataset	Income year	Data set size	Population coverage[b]	Sampling frame
United Kingdom[a]	Family Expenditure Survey	1986	7.178	96.5	Postcode address file
Belgium	Panel Study of the Centre for Social Policy	1985	6,471	-	Postcode address file
France	Household Income Survey	1984	12,693	97.0	Income Tax Register and Electoral Register
Germany (West)[a]	German Panel Surve	1984	5,159	96.0	Electoral Register
Italy	Bank of Italy Income Survey	1986	8.022		General Population Register
Luxembourg	Household Panel Study	1985	2.012	97.0	Social Security Register and other source
Netherlands	Survey of Income and Programme Users	1987	4,190	98.2	Postal and Telephone Register
Australia	Income and Housing Survey	1985-86	7,560	97.0	Dicennial Census
Canada	Survey of Consumer Finance	1987	10,999	98.1	Dicennial Census
Sweden	Swedish Income Distribution Survey	1987	9,530	98.1	Income Register
United States	Current Population Survey	1986	11,614	97.6	Dicennial Census

Notes: (a) The United Kingdom and German surveys collect subannual income data. The German data is normalised to annual levels; the UK data is based on current income multiplied to annual levels. All other countries collect annual data.

(b) As *a per* cent of the total national population.

Source: LIS Technical Database.

The results presented in this study are analyses of *individuals.* In other words, the person is the unit of analysis. Individuals are, however, categorised by the type of *benefit unit* to which they belong, and by their *household* income. Income is adjusted to take account of household size and composition using the McClements equivalence scale.

While this report seeks as far as possible to replicate the HBAI methodology on the LIS data tapes, it is not possible to achieve total consistency. Some of the most important differences include the following:

- The HBAI statistics are based on the Family Expenditure Survey, adjusted on the basis of the Inland Revenue's Survey of Personal Incomes (SPI) to reduce the variability introduced into one year's data because of the small sample numbers and low response rates of very rich households. This procedure will tend to reduce random fluctuations in the calculated mean income from year to year, and may therefore have a significant impact on estimates of the proportion of the population with incomes below fractions of the mean. The FES data tapes included in LIS has not been adjusted in this way.
- The HBAI results are based on this adjusted sample, which is then 'grossed-up' by weights, so that the estimates refer to the total population of the UK. These weights are not included in the sample provided to LIS, so that the results for the UK given in this report are based on the unweighted sample numbers. All other data sets contain weights, which are used in estimating the results that follow.
- Disposable income in the HBAI statistics is income net of contributions to occupational pension schemes, as well as income tax, national insurance contributions, rates etc. Information on contributions to occupational pension schemes is not available in the LIS data tapes, except in the case of Sweden. Thus, even though it is highly desirable to take account of this determinant of living standards it has not been possible to do so.
- The results refer only to income before housing costs.
- In the Swedish data set, single persons over the age of 18 years are classified as separate households, even if they are actually sharing accommodation with others. This may have a major impact on the measured well-being of young people, who are treated as if they were living alone when they may be living with their parents.

These issues are discussed in greater depth in the Appendices.

It should be noted that there are some areas where full comparability in the LIS data has not been achieved. The first relates to the issue of negative incomes in the surveys. In all countries except Germany negative incomes are coded as negatives. In the original German data these are coded to zero. This means that any comparison involving Germany should also recode these negative incomes to zero. This has been done in the following analysis [6] and had some substantial effects - for example, the lowest negative income in the Australian data was for someone over 75, and recoding to zero raised the average incomes of persons over 60 by around ten per cent.

It also appears that in the French data, incomes are imputed to some low income groups of the elderly with the assumption of 100 per cent take-up of the *minimum viellesse.* Clearly this will have substantial implications for comparing living standards in France with those in other countries. Another question relates to the coding of very high incomes. In the US, for example, around the top five per cent of all incomes are coded to the one maximum value (around $150,000), while in Australia they are coded to the mean of the top 5 per cent. These practices are followed as part of the process of protecting the confidentiality of respondents in the original surveys. The US approach could be expected to reduce measured inequality and probably poverty, while the Australian approach would not. It appears that there is no uniformity in the treatment of very high incomes in other LIS surveys. For example, the maximum equivalent disposable income of the UK population (i.e. the highest single case) was 10.7 times the mean; in the Netherlands, the corresponding figure was 4.9, and in Luxembourg, around 5.7; in Sweden and in Italy the maximum was around 30 times the mean, and in Germany 36 times the mean; in France the highest equivalent income was 137 times the mean. It seems likely that the countries with the lowest maximum incomes adjust their data.

3.2 Defining the older population

Table 3.2 shows the proportion of the population in each country who are older people, as measured in the LIS data. The highest proportion is in Sweden, where nearly 21 per cent of the population fall into this group, followed by Germany and then the United Kingdom. The proportion of the population who are older people is lowest in Canada, Australia and Belgium. There is a wide variation between countries in the proportion who are either single or couples, with the proportion of the older population who are single ranging from just under 40 per cent in Belgium to nearly 55 per cent in Luxembourg. The United Kingdom has slightly more single older people than the overall average, and also slightly more older couples than average, so that the total number of older people is also more than the average. The proportion of the older UK population who are single is very close to the overall average.

Table 3.2: **Older people as proportion of the population, selected countries, mid 1980s**

	Single older people	**Older couples**	All **older people**	**Single as % of total**
United Kingdom	7.5	8.8	16.3	46.0
Belgium	5.0	7.7	12.7	39.5
France	7.1	7.6	14.7	48.3
Germany	9.1	9.1	18.2	50.0
Italy	6.4	9.0	15.4	41.6
Luxembourg	7.6	6.3	13.9	54.7
Netherlands	5.7	7.4	13.1	43.5
Australia	5.2	7.4	12.6	41.3
Canada	5.0	6.8	11.8	42.4
Sweden	9.6	11.2	20.8	46.2
United States	6.3	7.1	13.4	47.0
Mean	**6.8**	**8.0**	**14.8**	**44.4**

Source: Estimated from LIS data files.

This is also standard practice in the HBAI analysis, and so our approach is also consistent with this.

3.3 **Relative incomes** by **age**

Table 3.3 shows the relative incomes of different age groups in the countries included in the analysis. These figures show the average (mean) equivalent household income of all persons in each group expressed as a proportion of the mean equivalent income of all persons in each country. For example, the table shows that persons under the age of 25 years in the United Kingdom on average have incomes that are 93 per cent of the average for the whole population; for those aged 25 to 34 in contrast average incomes are 111 per cent of the overall population average. In all countries the group less than 25 years of age has a lower average income than the overall mean in each country. Those 65 years and over tend to have lower average incomes than those younger groups, but in a number of countries some of the older age groups, on average, are better off or as equally well off as the overall mean. This is the case for those aged 65 to 74 in France, Germany, the Netherlands and the United States, while the 75 years and over groups in the Netherlands are as equally well-off as the overall average.

Table 3.3: **Mean equivalent income of age group as proportion of overall mean, selected countries, mid 1980s**

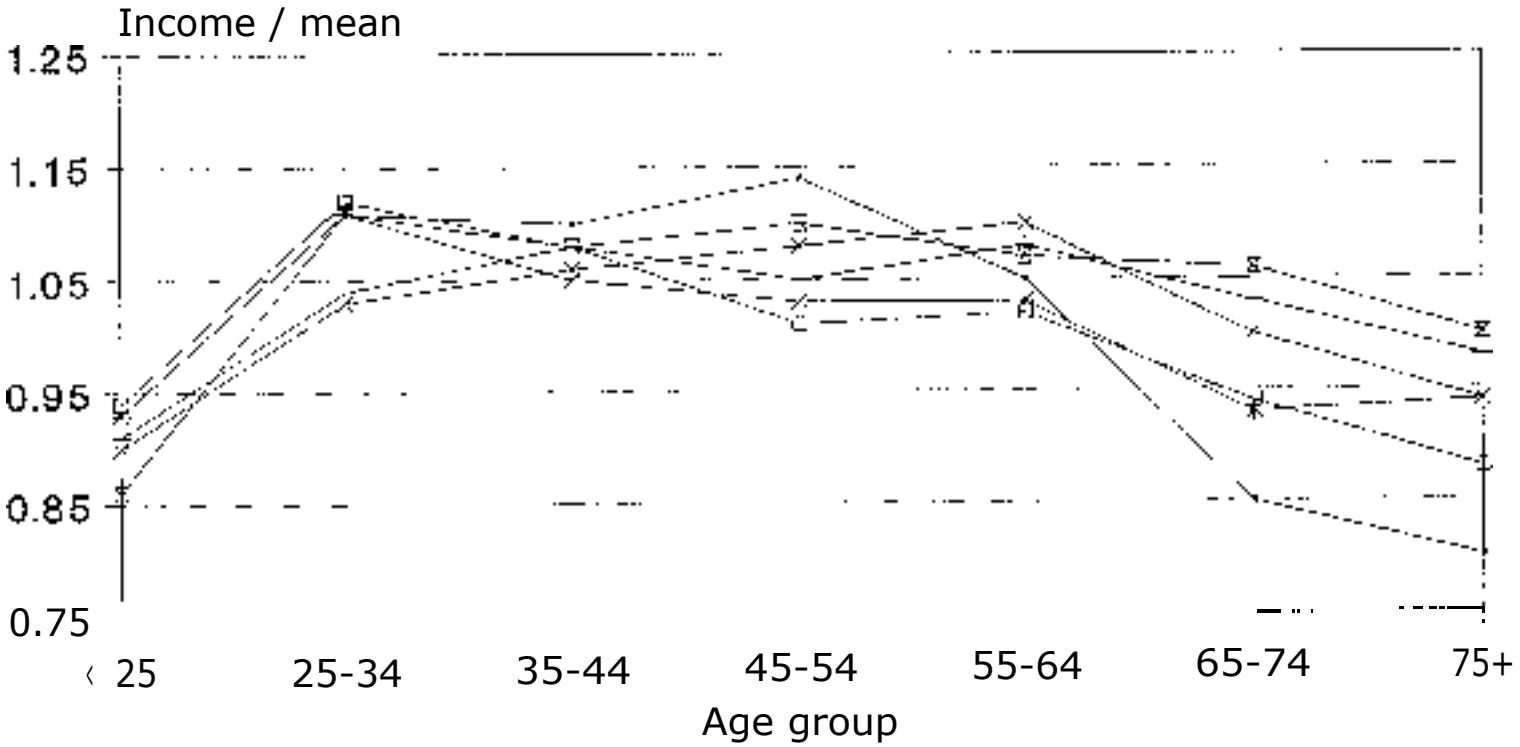
	Age group							
	< 25	25-34	35-44	45-54	*55-64*	65-74	75 +	Total pop'n
United Kingdom	0.93	1.11	1.10	1.14	1.05	0.85	0.80	1.00
Belgium	0.97	1.12	1.03	1.02	1.01	0.91	0.83	1.00
France	0.91	1.04	1.08	1.05	1.08	1.03	0.98	1.00
Germany	0.90	1.03	1.06	1.08	1.10	1.00	0.94	1.00
Italy	0.94	1.12	1.08	1.01	1.02	0.94	0.88	1.00
Luxembourg	0.93	1.11	1.05	1.03	1.03	0.93	0.94	1.00
Netherlands	0.86	1.11	1.08	1.10	1.07	1.06	1.00	1.00
Australia	0.92	1.13	1.09	1.18	1.06	0.73	0.72	1.00
Canada	0.90	1.08	1.07	1.14	1.11	0.93	0.84	1.00
Sweden	0.91	1.06	1.10	1.21	1.13	0.91	0.72	1.00
United States	0.84	1.07	1.11	1.20	1.18	1.05	0.82	1.00
Mean	0.91	1.09	1.08	1.11	1.08	0.94	0.86	1.00
SD	0.04	0.03	0.02	0.07	0.05	0.10	0.10	

Source: Estimated from LIS data files.

In a sense, these age-income profiles illustrate the well-known life cycle stages associated with the work of Rowntree (1901), and more recently explored in detail in O'Higgins, Bradshaw and Walker (1988). This is most clearly seen in Figures 3.1a and 3.lb, which plot these average incomes by age for each country. For the sake of clarity, Figure 3.1a shows results for the United Kingdom and the other EC countries included in the study, while Figure 3.1 b compares the profile for the UK with those of the non-EC countries.

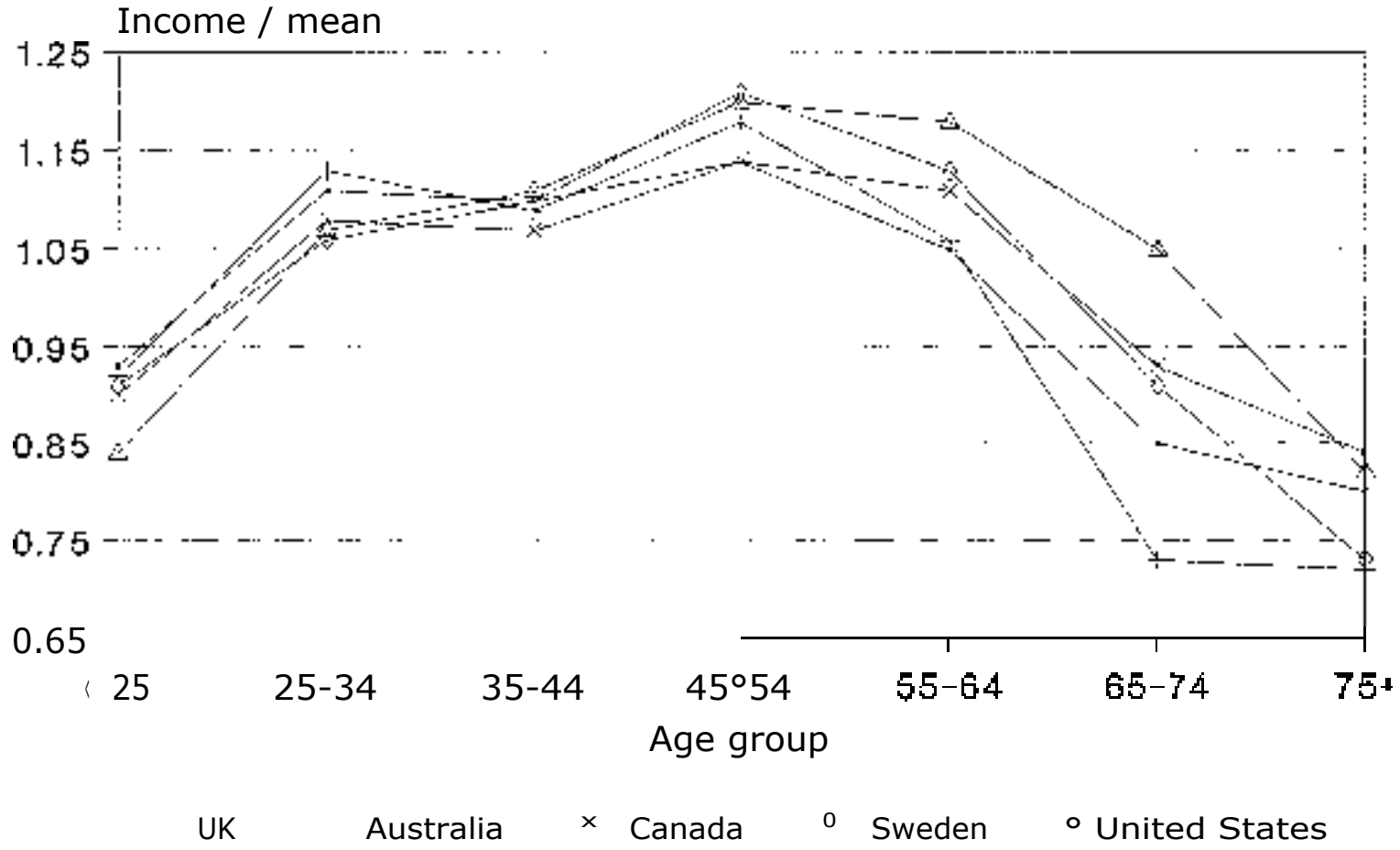
Figure 3.1a suggests that this pattern in the UK differs from that in other EC countries, with the UK having the highest peak in the 45 to 54 year age groups, and also having the lowest average for those aged 65 to 74 years and those 75 years and over. Figure 3.lb suggests, however, that the UK does not reveal as pronounced a pattern as the non-EC countries. The peak period of prosperity (45 to 54 years) is relatively lower in the UK than in Australia, Sweden or the United States, while in the older age groups those in Australia and in Sweden over 75 years) tend to fare relatively less well.

Figure 3.1a: **Mean equivalent income of age group as proportion of overall mean, selected countries in the mid 1980s**



European Union

Figure 3.1b: **Mean equivalent income of age group as proportion of overall mean, selected countries in the mid 1980s**



Another way of considering these results is shown in Table 3.4, which summarises the disparities between age groups, showing the age group in each country with the lowest average income, those with the highest average income, and the ratio of the highest average incomes (of an age group) to the lowest average income. The groups with the lowest average incomes appear to fall into two camps. In the United Kingdom, Belgium, Italy, Australia, Canada and the United States, the lowest average income is experienced by those aged 75 years or over, while in France, Germany, Luxembourg and the Netherlands the group with the lowest average income are those under 25 years of age. It should be remembered that these figures refer to all persons under 25 years of age, most of whom will be dependent children. This means that their household income will mainly be that of their parents, and implies that it is families with children who have the lowest average equivalent incomes in these countries.

Table 3.4: **Disparities between average incomes of age groups, selected countries, mid 1980s**

	Lowest **income**	**Highest income**	**Ratio** of **highest** to **lowest income**
United Kingdom	75+	45-54	1.43
Belgium	75+	25-34	1.35
France	< 25	55-64	1.10
Germany	< 25	55-64	1.17
Italy	75+	25-34	1.27
Luxembourg	< 25	25-34	1.19
Netherlands	< 25	25-34	1.29
Australia	75+	45-54	1.64
Canada	75+	45-54	1.36
Sweden	75+	55-64	1.66
United States	75+	55-64	1.46

Source: Estimated from LIS data files.

There is somewhat greater diversity in the groups with the highest average income. In the United Kingdom, Australia and Canada, it is those aged 45 to 54 years; in France, Germany, Sweden and the United States, it is the 55 to 64 year age group; in Belgium, Italy, Luxembourg and the Netherlands, it is the 25 to 34 year age group. Bearing in mind that children on average have lower incomes than any groups up to 65 years of age, this suggests that there is a distinction between families with children and those without children. The age groups with the highest average incomes in each country would also tend to have lower proportions with dependent children, either because they are in early family formation (25 to 34) and births have been postponed, or because they no longer have dependent children.

It must be emphasised that these results refer to the *average* incomes of different age groups, and as highlighted by Quinn (1987), comparisons of average incomes may disguise important variations within age groups. While bearing this in mind, the results presented above are of interest. They suggest that the framework of Rowntree (1901) still has some validity, and that on average children and older people have the lowest average incomes. Having said this, there also appears to be significant differences between countries in the extent to which older people are vulnerable on average to relative low income.

Table 3.5 shows the mean equivalent income of older people expressed as a proportion of the mean income of the total population in each country. Thus, these figures are similar to those in earlier tables, except that the `older population' includes women aged 60 to 64 years. The mean income of all older people in the United Kingdom is 84 per cent of that of the general population. This is broadly similar to the level in Sweden. The relative incomes of older people approach parity with the general population in Germany and the United States, and exceed that level in France and the Netherlands. In Australia, the net equivalent incomes of older people are estimated to be around three-quarters that of the general population. The table also shows that there are marked differences between the average position of single older people and older couples in some countries. In

Belgium and Luxembourg, single older people are estimated to be substantially better-off on average than older couples. This is also true in Italy, the Netherlands, and Germany but to a much smaller extent. There is a rough parity on average in the United Kingdom and Australia. In the other countries, couples are estimated to be better-off than single older people, with the differences being widest in Sweden and the United States.

Table 3.5: **Mean equivalent income of older people as proportion of overall mean, selected countries, mid 1980s**

	Single older people	Older couples	All older people	Singles/ couples
United Kingdom	0.85	0.84	0.84	1.01
Belgium	0.92	0.86	0.88	1.08
France	0.99	1.03	1.01	0.96
Germany	0.99	0.97	0.98	1.02
Italy	0.94	0.90	0.92	1.05
Luxembourg	0.96	0.89	0.93	1.09
Netherlands	1.05	1.01	1.03	1.05
Australia	0.73	0.74	0.74	0.99
Canada	0.85	0.91	0.89	0.93
Sweden	0.76	0.92	0.85	0.83
United States	0.85	1.08	0.97	0.78

Source: Estimated from LIS data files.

Table 3.6 breaks these figures down further, by comparing the mean equivalent income of each quintile group of older people to the mean equivalent income of the total population in each country. This shows that the differences in the overall ratios is caused by different factors in different countries. In the United Kingdom the average income of all older people is less than it is in Germany or France, but the average income of all older people in the lowest quintile is about the same in all three countries (except in Germany, where it is slightly lower). Thus, these figures give one indication of the extent of inequality in the incomes of older people, as well as the relative incomes of those in the lowest quintile.

The lowest quintile of older people have average incomes around half the population average in the United Kingdom, Belgium, France, Germany, Luxembourg, Canada and Sweden. Couples in Luxembourg are not as well off as single older people and couples in the lowest quintile in Sweden have higher average incomes than single older people. The lowest quintile is consistently best placed in the Netherlands, although the lowest quintile of older couples in Sweden is nearly as well-placed. The lowest quintile is worst-off in Australia and the United States; indeed, the average income of the lowest quintile of single older people in the United States is only 29 per cent of the average equivalent income of the total population.

While there are interesting differences across countries in the relative incomes of the three middle quintiles, the most striking disparities are in the relative incomes of the highest quintile of older people. In the United Kingdom and Belgium, the richest quintile of older people has equivalent disposable incomes about 1.5 times the average for the entire population. In France in contrast, this figure is nearly 2.0 times the average; in Germany and the Netherlands it is 1.8; in Italy 1.7; and in Luxembourg and Canada, it is around 1.6 times the average. The highest quintile is by far the best-off in the United States, where their average incomes are more than twice the average, although this average is pulled up by the very high figure for older couples. The highest quintiles of older people are relatively least prosperous in Sweden and Belgium and Australia, although the Belgian and Australian figures are similar to those in the United Kingdom.

Table 3.6: **Ratio of average income of quintile groups of older people to overall average income of the total population, selected countries, mid 1980s**

	Quintile group					
	Lowest	**Second**	**Third**	**Fourth**	**Highest**	**Total**
United Kingdom						
Singles	0.50	0.63	0.72	0.86	1.52	0.85
Couples	0.48	0.60	0.71	0.92	1.50	0.84
All older	0.49	0.61	0.72	0.89	1.51	0.84
Belgium						
Singles	0.53	0.74	0.86	1.02	1.47	0.92
Couples	0.46	0.65	0.78	0.96	1.44	0.86
All older	0.48	0.68	0.82	0.99	1.45	0.88
Free,						
Single;	0.48	0.67	0.82	1.04	1.93	0.99
Couples	0.52	0.67	0.84	1.12	1.99	1.03
All older	0.50	0.67	0.83	1.08	1.97	1.01
Germany						
Singles	0.47	0.67	0.83	1.04	1.91	0.99
Couples	0.48	0.71	0.86	1.08	1.72	0.97
All older	0.47	0.69	0.85	1.06	1.81	0.98
Italy						
Singles	0.42	0.61	0.83	1.08	1.78	0.94
Couples	0.42	0.63	0.81	1.06	1.59	0.90
All older	0.42	0.62	0.81	1.06	1.67	0.92
Luxembourg						
Singles	0.50	0.72	0.88	1.12	1.61	0.96
Couples	0.44	0.64	0.81	0.99	1.56	0.89
All older	0.47	0.68	0.85	1.06	1.59	0.93
Netherlands						
Singles	0.65	0.79	0.85	1.10	1.87	1.06
Couples	0.62	0.71	0.88	1.12	1.75	1.01
All older	0.63	0.77	0.86	1.11	1.80	1.03
Australia						
Singles	0.38	0.49	0.55	0.73	1.51	0.73
Couples	0.39	0.53	0.59	0.76	1.45	0.74
All older	0.39	0.51	0.58	0.75	1.47	0.74
Canada						
Singles	0.43	0.60	0.72	0.93	1.56	0.85
Couples	0.49	0.63	0.77	1.00	1.69	0.91
All older	0.46	0.62	0.74	0.97	1.64	0.89
Sweden						
Singles	0.49	0.63	0.71	0.82	1.16	0.76
Couples	0.61	0.74	0.84	0.99	1.40	0.92
All older	0.54	0.68	0.78	0.92	1.31	0.85
United States						
Singles	0.29	0.48	0.68	0.98	1.82	0.85
Couples	0.38	0.65	0.91	1.27	2.21	1.08
All older	0.33	0.56	0.80	1.13	2.05	0.97

Source: Estimated from LIS data tiles.

3.4 Income inequality

Table 3.7 shows differences in income inequality, measured with the Gini coefficient[7]. For the population as a whole, the Gini coefficient is greatest in the United States, followed by Italy, Australia and then France. The coefficient for the United Kingdom is slightly higher than the average for all the countries included. Inequality is lower in Sweden than in any other country, followed by Belgium, Luxembourg and then Germany.

The Gini coefficient measures the extent to which an actual distribution differs from an exactly equal distribution. The coefficient varies between values of 0.0 and 1.0. The greater the value of the coefficient, the greater is the level of inequality.

Among those aged 65 to 74 years, inequality is greatest in the United States and least in Sweden. These two extremes do not affect the mean for all countries. but have a substantial effect on the standard deviation. That is, the range is much narrower for the other countries. For the 65 to 74 year age group, the United Kingdom has a lower than average Gini coefficient.

Table 3.7: **Income inequality** by **age group, selected countries, mid 1980s**

	Gini coefficient for age group								
	< 15	**15-24**	25-34	35-44	45-54	**55-64**	65-74	75 +	**Total pop'n**
United Kingdom	0.29	0.26	0.31	0.30	0.29	0.28	0.24	0.22	0.29
Belgium	0.22	0.23	0.22	0.24	0.23	0.23	0.23	0.20	0.23
France	0.28	0.29	0.26	0.29	0.33	0.36	0.27	0.29	0.30
Germany	0.23	0.22	0.24	0.25	0.24	0.25	0.26	0.29	0.25
Italy	0.30	0.32	0.31	0.31	0.31	0.32	0.27	0.28	0.31
Luxembourg	0.23	0.20	0.24	0.24	0.22	0.24	0.24	0.24	0.23
Netherlands	0.22	0.29	0.26	0.27	0.28	0.26	0.23	0.21	0.26
Australia	0.29	0.27	0.30	0.30	0.30	0.36	0.27	0.26	0.31
Canada	0.27	0.26	0.26	0.28	0.29	0.32	0.27	0.24	0.28
Sweden	0.16	0.25	0.19	0.19	0.20	0.19	0.17	0.15	0.21
United States	0.34	0.32	0.31	0.32	0.32	0.34	0.35	0.34	0.34
Mean	0.26	0.26	0.26	0.27	0.27	0.29	0.25	0.25	0.27
SD	0.05	0.04	0.04	0.04	0.04	0.06	0.04	0.05	0.04

Source: Estimated from LIS data files.

For those aged 75 years and over, once again the two extremes are represented by the United States and Sweden. In France, Germany and Italy inequality is greater among those aged 75 years and over than among those aged 65 to 74 years. After Sweden, Belgium and the Netherlands, the United Kingdom has the lowest coefficient for this age group. In addition, in the United Kingdom, Belgium, the Netherlands, Australia. Canada and Sweden the level of inequality is lower among those aged 75 years and over than in any other age group. In Germany, inequality is higher among those aged 75 years and over than among any other age group, and the next highest level of inequality in Germany is among those aged 65 to 74 years. The patterns for other countries are more mixed.

Another measure of inequality is shown in Table 3.8. Following the example of Atkinson (1993), this table shows the ratio of the income share of the highest equivalent income quintile of each group to the share of the lowest quintile in each country, with separate results for single older people, older couples, all older people, and for the population as a whole. The ratio of the share of the highest quintile to the share of the lowest quintile is the same as the ratio of the mean incomes of these quintiles, and is a measure of the distance between the highest and lowest income groups.

For the total population, this range is about the same in the United Kingdom as in France. The range is wider in Italy and Australia, and is particularly wide in the United States. On the other hand, the range is much narrower in Belgium, Luxembourg and Sweden than in any other country. It is also apparent this range is much less among older people in the United Kingdom than among the general population. This pattern also applies in other countries, with the exception of Germany and Luxembourg, where the income range is wider among older people than among the population as a whole.

Sweden, Belgium and the Netherlands have the narrowest range for single older people and for older couples, with the United Kingdom then having the least inequality for both these groups. Sweden, however, is far and away the most equal; Belgium, the Netherlands and the United Kingdom are closer, followed by Luxembourg. Among all older people, this rate is by far the highest in the United States, followed at some distance by Italy, France and Germany. It can also be seen that this income range tends to be wider for older single people than for older

couples. The only exceptions to this are the United Kingdom, Belgium and Luxembourg.

Table 3.8: **Ratio of income share of highest quintiles to share of lowest quintile, older people and total population, selected countries, mid 1980s**

Country	Single older people	Older couples	All older people	Total population
United Kingdom	3.02	3.12	3.08	4.54
Belgium	2.78	3.12	3.01	3.19
France	4.03	3.84	3.93	4.55
Germany	4.03	3.58	3.83	3.49
Italy	4.23	3.78	3.96	4.86
Luxembourg	3.21	3.53	3.40	3.22
Netherlands	2.90	2.84	2.88	3.85
Australia	3.96	3.67	3.80	5.07
Canada	3.62	3.44	3.53	4.33
Sweden	2.38	2.32	2.42	3.04
United States	6.19	5.88	6.30	6.46

Source: Estimated from LIS data files.

3.5 The distribution of older people by equivalent income quintile

The relative incomes of older people can also be assessed in other ways. Table 3.9 shows the composition of equivalent income quintile[8] groups across countries - more specifically, the proportion of all persons in each quintile who are elderly, either single, in couples, or either. The concentration of the elderly into particular income groups - or the lack of concentration - can be assessed by comparing the proportion of the total population who are members of a particular type of benefit unit with the proportion of a particular quintile group who are members of that type of benefit unit. For example, it can be seen that 7.5 per cent of all people in the United Kingdom live in older single benefit units, and 14.6 per cent of the second quintile are single older people, suggesting they are over-represented in this group.

Overall, in the United Kingdom older people as a group are over-represented in the lowest and second quintiles - particularly the second - and are under-represented in other groups. In Belgium, the highest degree of over-representation is in the lowest quintile. In France, the highest degree of over-representation of the older population is in the second quintile. In Germany, there is a slight degree of over-representation in the first three quintile groups. In Italy, the highest level of over-representation is in the second quintile, and in Luxembourg, in the lowest quintile. In the Netherlands, older people are significantly under-represented in the lowest quintile but tend to be most concentrated in the second quintile. In Australia, there is a very high degree of concentration of older people in the first two income quintiles, and the same is true of Sweden. In Canada and in the United States, older people are most over-represented in the second quintile group. In summary, therefore, there appears to be a pattern common to many countries, with the highest level of over-representation of older people being in the second income quintile, rather than the lowest. The exceptions to this are Australia and Sweden, where there is very high concentration of older people in the lowest income grouping. The other exception is the Netherlands; although older people are over-concentrated in the second quintile, in contrast with all other countries they are very under-represented in the lowest income group

8 Quintiles are income values which divide the population, when ranked by income, into five equal sized groups. The lowest quintile group therefore is the bottom 20 per cent of the equivalent income distribution.

Table 3.9: **Older people as a proportion of population** by **equivalent income quintile, selected countries, mid 1980s**

	Quintile group					
	Lowest	**Second**	**Third**	**Fourth**	**Highest**	Total
United Kingdom						
Singles	[7.6]	14.6	(7.9)	4.0	3.2	7.5
Couples	(11.1)	14.6	7.8	6.4	4.0	8.8
All older	[18.7]	29.2	(15.7)	10.4	7.2	16.3
Belgium						
Singles	4.9	5.7	7.5	4.1	2.9	5.0
Couples	12.3	9.5	7.4	5.0	4.1	7.7
All older	17.2	15.2	14.9	9.0	7.1	12.7
France						
Singles	(5.5)	9.4	8.6	6.1	5.7	7.1
Couples	(6.0)	9.9	7.5	6.6	7.9	7.6
All older	[11.5]	19.4	16.0	12.7	13.6	14.7
Germany						
Singles	[12.2]	9.3	(9.2)	6.9	(7.9)	9.1
Couples	8.7	10.7	9.6	8.2	8.0	9.1
All older	(20.8)	20.0	18.9	15.2	15.9	18.2
Italy						
Singles	7.5	6.6	6.9	6.0	5.0	6.4
Couples	8.1	12.5	9.3	9.6	5.4	9.0
All older	15.6	19.1	16.1	15.7	10.4	15.4
Luxembourg						
Singles	(9.3)	6.5	6.8	(7.4)	7.9	7.6
Couples	9.6	6.9	6.8	4.1	4.1	6.3
All older	18.8	13.3	13.6	(11.5)	12.0	13.9
Netherlands						
Singles	(1.1)	[7.8]	[9.1]	4.8	5.5	5.7
Couples	3.3	11.9	6.9	8.1	6.7	7.4
All older	(4.4)	[19.8]	[16.0]	12.8	12.2	13.1
Australia						
Singles	[12.8]	(6.2)	2.7	2.5	2.0	5.2
Couples	(12.8)	13.9	4.4	3.4	2.7	7.4
All older	25.6	20.1	7.1	5.9	4.7	12.6
Canada						
Singles	(6.9)	(8.2)	3.9	3.3	3.0	5.0
Couples	6.9	11.5	6.4	4.7	4.7	6.8
All older	(13.8)	19.7	10.3	8.0	7.7	11.8
Sweden						
Singles	[23.1]	(14.5)	3.9	4.1	2.3	9.6
Couples	[13.3]	20.1	[9.4]	7.7	5.4	11.2
All older	36.4	34.6	[12.4]	11.8	7.7	20.8
United States						
Singles	9.8	8.0	*5.7*	4.3	4.0	*6.3*
Couples	5.4	8.4	6.9	6.4	8.2	7.1
All older	15.1	16.3	12.6	10.7	12.2	13.4

Notes: ( ) - exceeds HBAI sensitivity limits under one equivalence scale.
[ ] - exceeds HBAI sensitivity limits under two or more equivalence scales.
Source: Estimated from LIS data files.

These patterns are illustrated in another way in Table 3.10 which shows the distribution of older people by income quintile. If older people were neither under-represented or over-represented in each income group, then exactly 20 per cent would be in each quintile. Therefore, if the numbers in Table 3.10 are greater than 20 per cent, older people are over-represented in this group, and if they are less than 20 per cent older people are under represented. It is apparent that single older people in the United Kingdom are particularly concentrated in the second quintile group, while older couples are also particularly likely to be in this group. Overall, just over one-third of all older people in the United Kingdom are in the second quintile of the overall distribution.

It is clear that single older people are most likely to be in the lowest income groups in Sweden and Australia. More than three-quarters of single older people in Sweden are in the bottom two income quintiles, and just over 70 per cent in Australia. In most countries, older couples are less likely than single older people to be in the lowest income group, although this is not the case in the United Kingdom, Belgium and Luxembourg, and in France the proportions are very similar. Taking all older people as a group suggests that older people in Australia are most likely to be in the lowest income quintile, followed by Sweden, and then Belgium and Luxembourg at a considerable distance. The degree of concentration of older people in the second quintile is greatest in the United Kingdom, although the figures for Australia, Canada and Sweden are not greatly different.

Table **3.10: Distribution of older people by equivalent income quintile, selected countries, mid 1980s**

	Quintile group				
	Lowest	**Second**	**Third**	**Fourth**	**Highest**
1. *Single older people*					
United Kingdom	*20.3*	*39.2*	21.1	10.7	*8.7*
Belgium	19.6	*22.6*	*29.9*	16.2	11.6
France	15.5	*26.7*	24.2	17.3	16.2
Germany	*26.7*	20.4	*20.3*	15.3	17.3
Italy	*23.5*	*20.5*	21.5	18.9	15.6
Luxembourg	*24.6*	17.1	17.9	19.7	*20.8*
Netherlands	15.5	*26.7*	24.2	17.3	16.2
Australia	48.7	*23.7*	10.2	*9.6*	*7.8*
Canada	*27.3*	*32.6*	15.4	12.9	11.7
Sweden	48.2	*30.3*	8.1	*8.6*	4.8
United States	*30.8*	25.1	18.0	13.7	12.5
Mean	27.9	26.3	18.2	14.4	13.2
2. *Older couples*					
United Kingdom	*25.2*	*33.2*	17.8	14.6	*9.2*
Belgium	32.0	*24.9*	19.4	12.9	10.8
France	15.8	*26.2*	19.7	17.4	20.8
Germany	19.0	*23.8*	21.3	18.1	*17.8*
Italy	18.0	*27.9*	*20.6*	21.4	12.1
Luxembourg	*30.5*	21.8	21.7	12.9	13.1
Netherlands	15.8	*26.2*	19.7	17.4	*20.8*
Australia	34.4	*37.5*	11.8	*9.2*	7.1
Canada	*20.3*	*33.6*	18.6	13.6	13.9
Sweden	*23.7*	*35.9*	16.8	13.9	10.2
United States	15.2	*23.7*	*19.6*	18.1	23.4
Mean	21.3	29.4	**18.9**	15.8	14.9
3. *All older people*					
United Kingdom	*23.0*	*35.9*	19.3	12.8	*9.0*
Belgium	27.1	*24.0*	*23.6*	14.2	11.1
France	15.7	*26.4*	21.9	17.4	18.6
Germany	*22.9*	22.1	20.8	*16.7*	17.6
Italy	*20.3*	24.8	21.0	*20.4*	13.6
Luxembourg	*27.3*	19.2	19.6	17.0	17.3
Netherlands	15.7	*26.4*	21.1	17.4	18.8
Australia	*40.3*	31.8	11.1	*9.3*	7.4
Canada	*23.3*	*33.2*	17.3	13.3	13.0
Sweden	*35.0*	*33.3*	12.8	11.4	7.4
United States	*22.5*	24.4	18.8	16.0	18.3
Mean	24.2	**28.0**	18.4	15.3	14.2

Source: Estimated from LIS data files.

3.6 Well-off older people

Most analysis of the relative incomes of older people concentrates on those with low relative incomes, but the results in Table 3.10 also point to a group of relative well-off older people, sometimes labelled as `Woopies' (Falkingham and Victor, 1991). The proportion of older people in the highest equivalent income quintile in each country might be taken as an indicator of the relative affluence of sub-groups of the older population. The figures in Table 3.10 show that 9.0 per cent of the older population in the United Kingdom are in the highest equivalent income

quintile for the total population. In fact, after Sweden and Australia, this is the lowest level of relative affluence, with the proportion of the highest quintile who are older people being more than twice as high in France, the Netherlands and the United States as in the United Kingdom, and with Germany nearly twice as high. It can also be seen that older couples are generally more likely to have incomes in the highest quintile group than are older single people, with the exception of Belgium, Italy, Luxembourg and Australia. Just over 20 per cent of single older people in Luxembourg are in the highest income quintile, and the same proportion of older couples in France and the Netherlands. Just under a quarter of older couples in the United States have incomes in the highest quintile group in that country.

Results employing a broader standard of affluence are shown in Table 3.11, which shows the proportion of individuals in households with incomes above the average in each country. This is roughly equivalent to the top two quintiles of the income distribution in each country, as can be seen from the last column of the table. The notable exception is Sweden, where 47.1 per cent of all individuals enjoy above average incomes, as a consequence of the more equal income distribution (i.e. a lower proportion have incomes below average). As with the results of Table 3.10, these figures suggest that older couples are generally more likely to have higher incomes than single older people, except in Belgium and Luxembourg. Single older people in Italy and Australia also appear to be slightly more likely to have above average incomes than older couples in these countries. Once again these figures suggest that the proportion of older people in the United Kingdom who can be classified as relatively well-off on this criterion is low compared to most of these other countries, being about the same as in Sweden and higher only than the proportion in Australia.

Table 3.11: **Proportion (°/,) of individuals in different groups with equivalent incomes greater than average equivalent income, selected countries, mid 1980s**

	Percentage of group				
	Non-older	**Single older**	**Older couple**	All **older**	**Total pop'n**
United Kingdom	44.1	19.9	23.8	22.0	40.5
Belgium	45.1	31.6	25.5	27.9	42.9
France	39.4	32.4	36.8	34.7	38.7
Germany	41.7	32.6	36.1	34.3	40.5
Italy	40.9	34.3	33.3	32.8	39.8
Luxembourg	41.5	40.5	26.8	34.3	40.5
Netherlands	39.5	35.7	38.4	37.2	39.3
Australia	43.9	17.4	16.7	17.0	40.5
Canada	43.2	25.6	30.1	28.2	41.4
Sweden	53.4	15.2	29.3	22.8	47.1
United States	42.7	17.6	43.3	35.9	41.8

Source: Estimated from LIS data files.

3.7 **Quintile shares**

Table 3.12 shows the shares of total income of all persons in each type of benefit unit held by older people in each country. For example, the lowest quintile of single older people in the United Kingdom hold 11.9 per cent of the total income held by all single older people in the United Kingdom, and the second quintile of single older people hold 14.9 per cent of the total income of all single older people. These figures suggest that lower income older people in the United Kingdom tend to have higher shares of total income than in other countries, apart from Sweden and the Netherlands. For example, the lowest quintile of single older people in the UK have 12 per cent of the total income of this group, compared to just over 12 per cent in the Netherlands, and just under 13 per cent in Sweden. The second quintile group of single older people in the United Kingdom have the equal third highest share after Sweden and Belgium.

Table 3.12: **Quintile shares of income, older people, selected countries, mid 1980s**

	Quintile group					
	Lowest	**Second**	**Third**	**Fourth**	**Highest**	**Total**
1. *Single older people*						
United Kingdom	11.9	14.9	17.1	20.2	35.9	100.0
Belgium	11.5	16.1	18.6	22.0	31.8	100.0
France	9.7	13.6	16.6	21.0	39.1	100.0
Germany	9.5	13.6	16.9	21.1	38.8	100.0
Italy	8.9	12.9	17.5	22.9	37.7	100.0
Luxembourg	10.4	14.9	18.3	23.3	33.3	100.0
Netherlands	12.2	14.8	16.0	20.7	35.4	100.0
Australia	10.4	13.4	14.9	20.0	41.3	100.0
Canada	10.2	14.1	16.9	22.0	36.9	100.0
Sweden	12.8	16.5	18.6	21.5	30.5	100.0
United States	6.9	11.2	15.9	23.1	42.8	100.0
2. *Older couples*						
United Kingdom	11.4	14.3	16.8	21.8	35.7	100.0
Belgium	10.8	15.1	18.2	22.5	33.6	100.0
France	10.1	12.9	16.4	21.8	38.7	100.0
Germany	9.9	14.7	17.8	22.2	35.4	100.0
Italy	9.3	14.0	17.9	23.4	35.3	100.0
Luxembourg	9.9	14.3	18.2	22.3	35.0	100.0
Netherlands	12.2	14.1	17.3	22.1	34.6	100.0
Australia	10.6	14.2	15.9	20.4	38.8	100.0
Canada	10.7	13.8	16.8	21.9	36.8	100.0
Sweden	13.2	16.1	18.3	21.6	30.6	100.0
United States	6.9	12.0	16.8	23.4	40.8	100.0
3. *All older people*						
United Kingdom	11.6	14.6	17.0	21.0	35.9	100.0
Belgium	10.9	15.3	18.5	22.3	32.9	100.0
France	9.9	13.2	16.5	21.4	39.0	100.0
Germany	9.7	14.1	17.4	21.7	37.1	100.0
Italy	9.2	13.6	17.7	23.2	36.4	100.0
Luxembourg	10.1	14.7	18.2	22.8	34.2	100.0
Netherlands	12.1	14.8	16.7	21.5	34.9	100.0
Australia	10.5	13.8	15.6	20.3	39.8	100.0
Canada	10.5	13.9	16.8	22.0	36.9	100.0
Sweden	12.7	16.2	18.4	21.8	30.9	100.0
United States	6.7	11.4	16.4	23.2	42.2	100.0

Source: Estimated from LIS data files.

The patterns of income shares for singles and couples are not markedly dissimilar, so it is probably simplest to concentrate on the overall results for all older people. The income share of the lowest quintile in the United Kingdom is the highest after Sweden and the Netherlands. The share of the lowest quintile of all older people in the United States is very much lower than in any other country. The shares of the lowest quintile in France, Germany and Italy are the next lowest, although much greater than in the United States. The share of the second quintile in the United Kingdom is very similar to that in Luxembourg and the Netherlands, although once again Sweden shows the highest share for this group. At the other end of the income spectrum, the highest quintile of older people have the greatest share in the United States, followed by Australia and then France. The United Kingdom is more middle ranking for this group, because more of the other countries have higher shares held by the third and fourth quintile groups.

Table 3.13 shows cumulative income shares, calculated from Table 3.12. The resulting Lorenz curves (of cumulative income shares) are charted in Figures 3.2a to 3.2j. Once again this description concentrates on all older people as a group, as with some qualifications, the picture for single older people does not differ markedly from that for older couples. Each figure compares the Lorenz curves for the United Kingdom with that for one other country. These results appear to suggest that the income distribution for all older people in the United Kingdom is more equal than in France, Germany, Italy, Australia, Canada or the United States, although to varying degrees. The income distribution for this group appears less equal in the United Kingdom than in Sweden or the Netherlands, however, and the Lorenz curves for Belgium and the United Kingdom intersect in the second quintile, and for Luxembourg and the United Kingdom they intersect in the fourth quintile group. It must also be emphasised that it is possible that the Lorenz curves intersect within the bottom quintile or the top quintile, so conclusions about inequality should be regarded as tentative.

Table 3.13: **Cumulative income shares, older people, selected countries, mid 1980s**

	Cumulative share of:				
	20 per cent	40 per cent	**60 per cent**	80 per cent	100 per cent
1. *Single older people*					
United Kingdom	11.9	26.8	43.9	64.1	100.0
Belgium	11.5	*27.6*	*46.2*	68.2	100.0
France	9.7	23.3	39.9	60.9	100.0
Germany	9.5	23.1	40.0	61.I	100.0
Italy	8.9	21.8	39.3	62.2	100.0
Luxembourg	10.4	25.3	43.6	69.9	100.0
Netherlands	12.2	27.0	43.0	63.7	100.0
Australia	10.4	23.8	38.7	58.7	100.0
Canada	10.2	24.3	41.2	63.2	100.0
Sweden	12.8	29.3	47.9	69.4	100.0
United States	6.9	18.1	34.0	57.1	100.0
2. *Older couples*					
United Kingdom	11.4	25.7	42.5	64.3	100.0
Belgium	10.8	25.9	44.1	66.6	100.0
France	10.1	23.0	39.4	61.2	100.0
Germany	9.9	24.6	42.5	64.7	100.0
Italy	9.3	23.3	41.2	64.6	100.0
Luxembourg	9.9	24.2	42.4	64.7	100.0
Netherlands	12.2	*26.3*	*43.6*	65.7	100.0
Australia	10.6	24.8	40.7	61.1	100.0
Canada	10.7	24.5	41.3	63.2	100.0
Sweden	13.2	29.3	47.6	69.2	100.0
United States	6.9	18.9	35.7	59.1	100.0
3. *All older people*					
United Kingdom	11.6	26.2	43.2	64.2	100.0
Belgium	10.9	26.2	44.7	67.0	100.0
France	9.9	23.1	39.6	61.0	100.0
Germany	9.7	23.8	41.2	62.9	100.0
Italy	9.2	22.8	40.5	63.7	100.0
Luxembourg	10.1	24.8	43.0	65.8	100.0
Netherlands	12.1	26.9	43.6	65.1	100.0
Australia	10.5	24.3	39.9	60.2	100.0
Canada	10.5	24.4	41.2	63.2	100.0
Sweden	12.7	28.9	47.3	69.1	100.0
United States	6.7	18.1	34.5	57.7	100.0

Source: Calculated from Table 2.8.

Figure 3.2a: **Cumulative income shares, all older people, UK and Belgium**

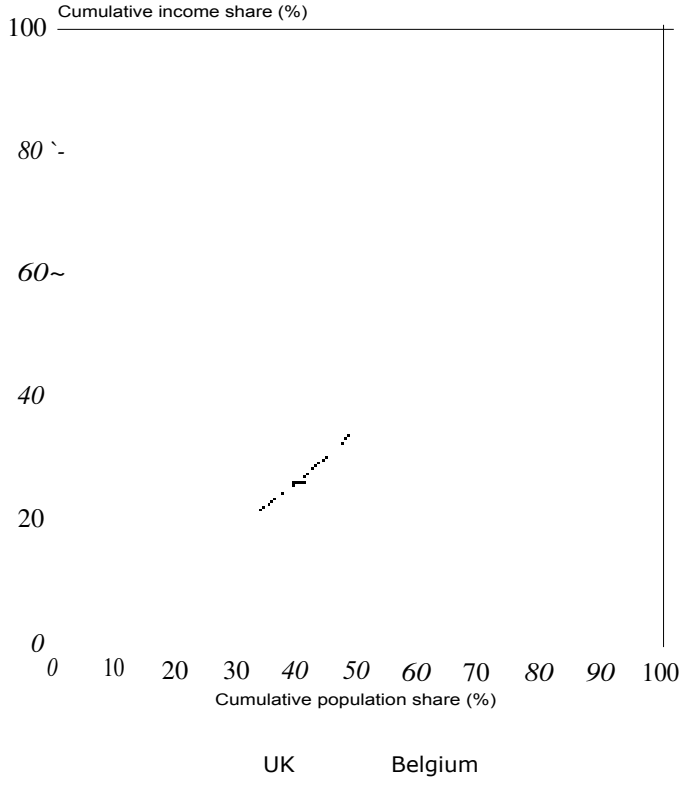


Figure 3.2b: **Cumulative income shares, all older people,** UK **and** France

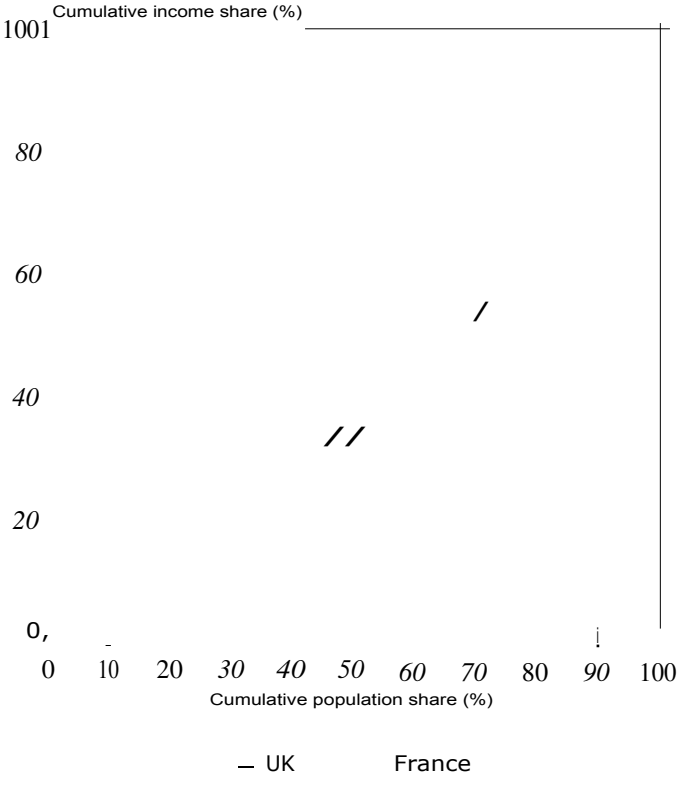


Figure 3.2c: **Cumulative income shares, all older people,** UK **and Germany**

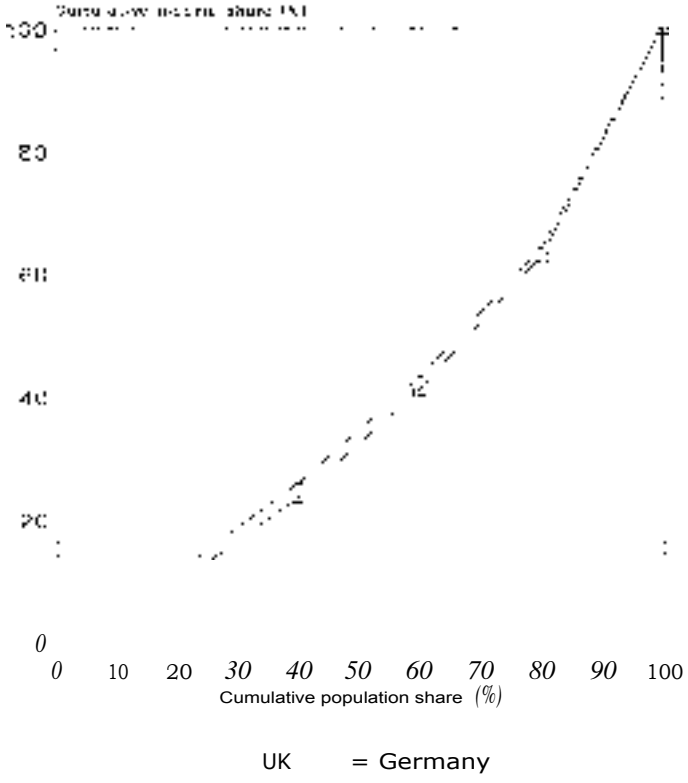


Figure 3.2d: **Cumulative income shares, all older people, UK and Italy**

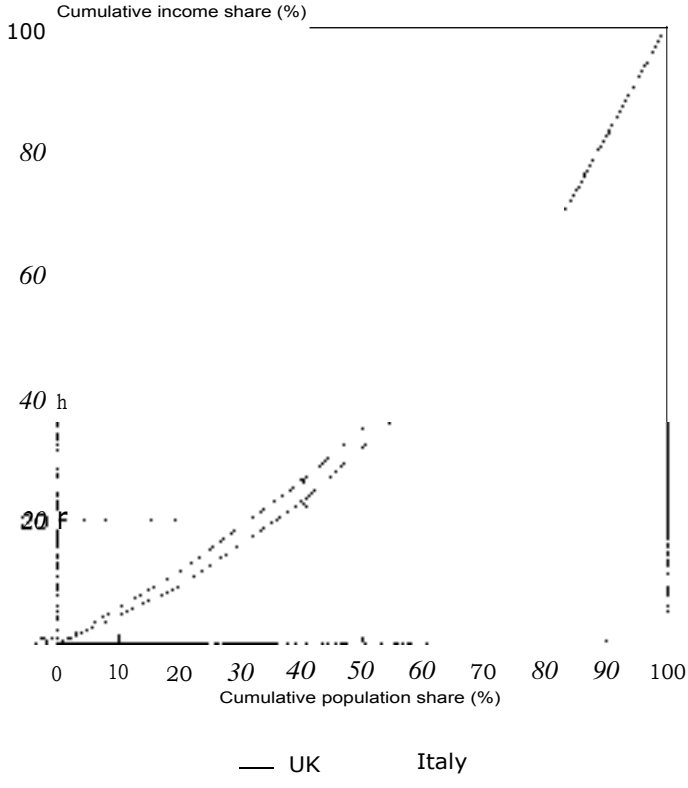


Figure 3.2e: **Cumulative income shares, all older people,** UK **and Luxembourg**

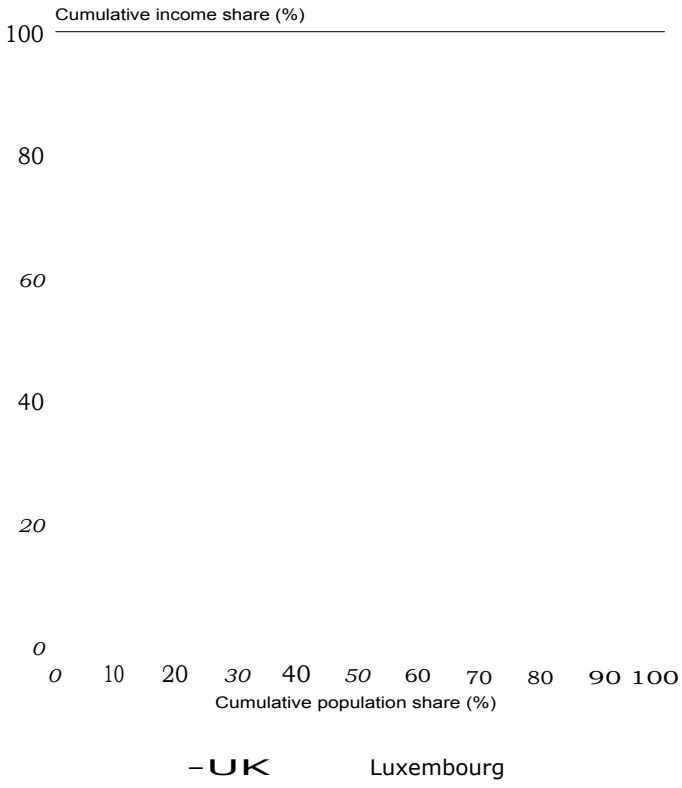


Figure 3.2fi Cumulative income shares, all older **people,** UK **and the Netherlands**

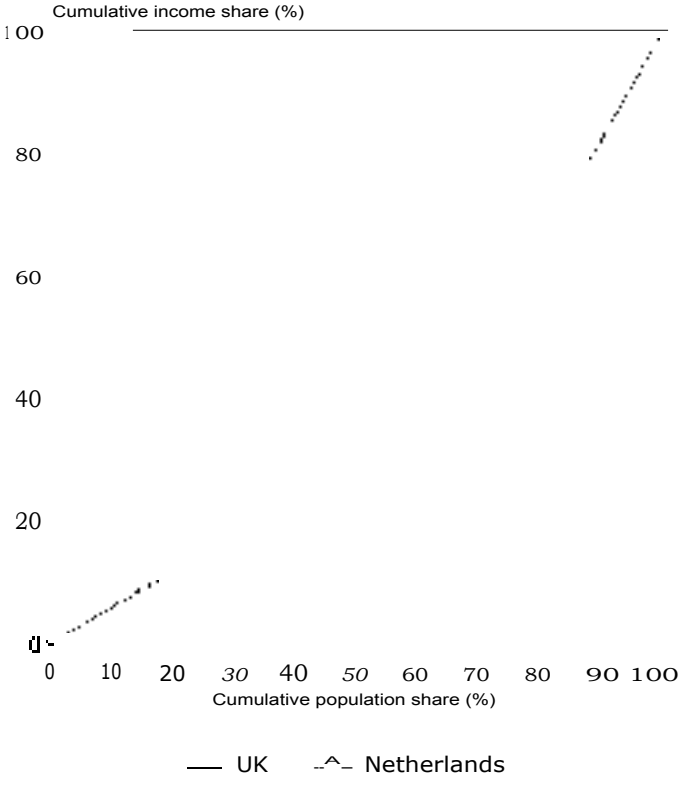


Figure 3.2g: **Cumulative income shares, all older people, UK and Australia**

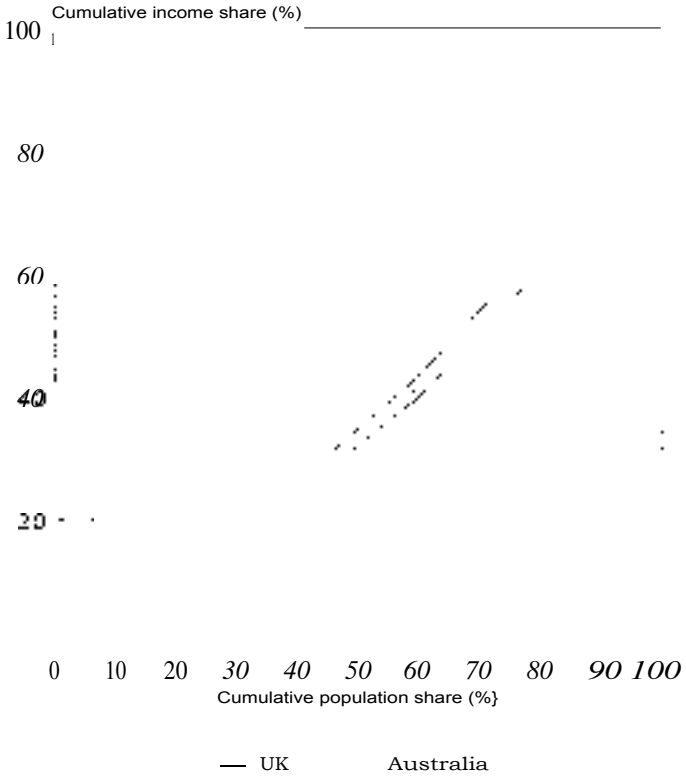


Figure 3.2h: **Cumulative income shares, all older people, UK and Canada**

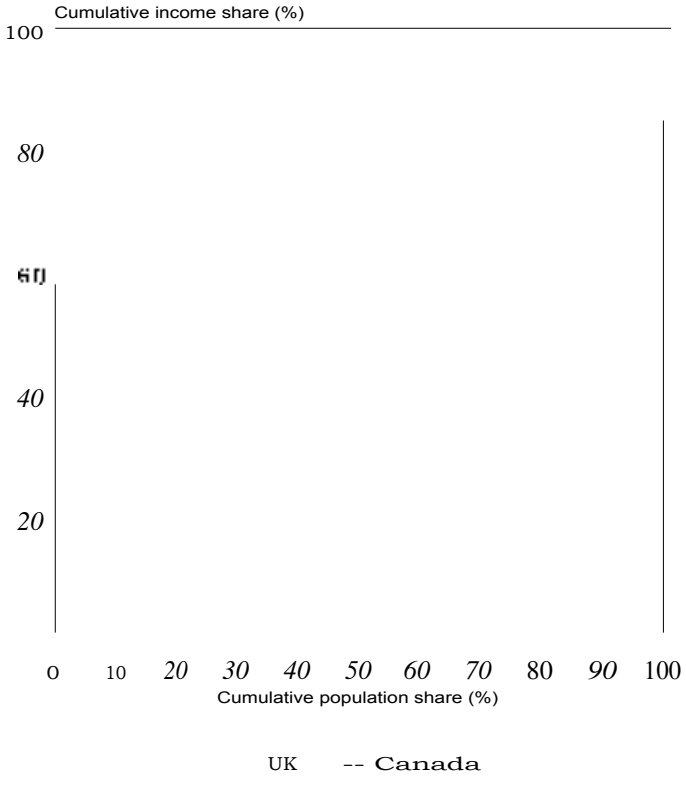


Figure 3.2i: **Cumulative income shares, all older people,** UK and Sweden

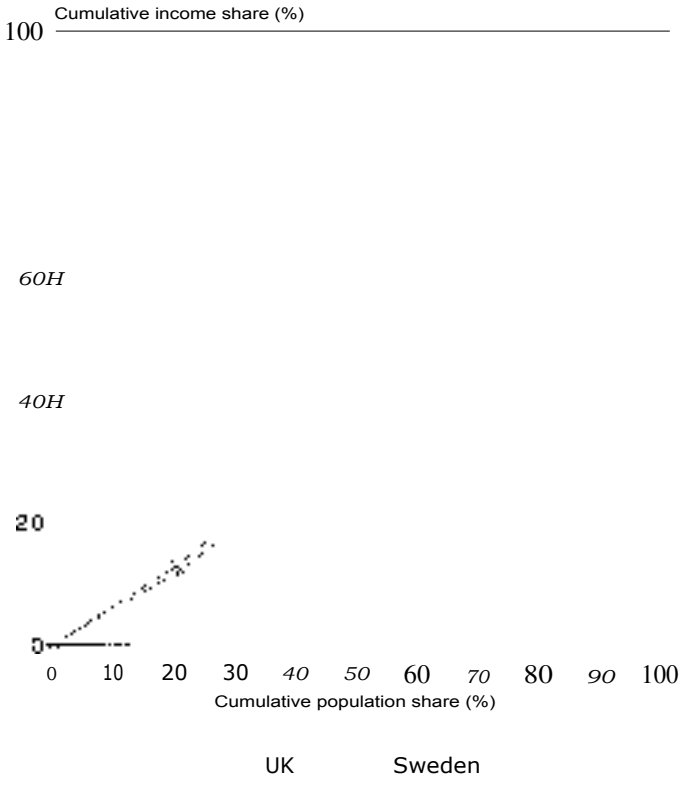
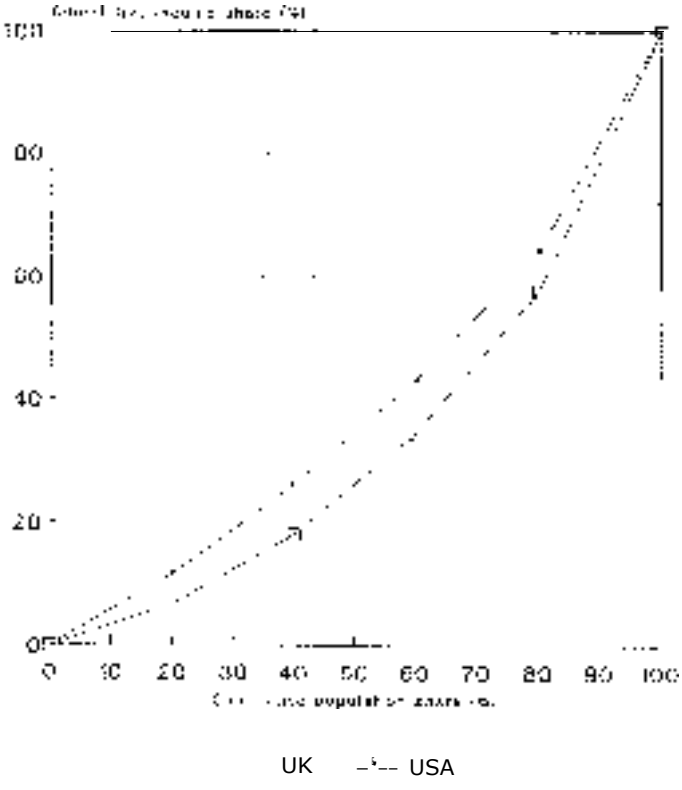


Figure 3.2j: **Cumulative income shares, all older people,** UK **and** USA



3.8 Households below average income

Table 3.14 shows the percentage of the population in each country with incomes below proportions of average equivalent income. For purposes of illustration, this table only shows numbers at 40, 50 and 60 per cent of average income. The table also presents separate results for single older people, couples, all older people and the total population.

The proportion of the older population in the United Kingdom with incomes less than 40 per cent of average income is estimated at 1.2 per cent. This is lower than in any other country except Sweden and the Netherlands. The corresponding percentages for France and Germany, for example, are 3.1 per cent and 4.1 per cent, respectively. The level is quite high in Italy at 7.4 per cent, but it is the highest by far in the United States at 15 per cent. At this level, the proportion of the older population with low incomes is less than the corresponding proportion for the general population in the United Kingdom, France, Italy, the Netherlands, Australia, Canada and Sweden: the proportions are about the same in the United States, and older people in Belgium and Luxembourg are more likely to have incomes below this level than are the general population.

At the 50 per cent line, 8.1 per cent of older people in the United Kingdom have relative low incomes. This is lower than in all other countries apart from France, the Netherlands, and Sweden. The proportions of older people with incomes below this level is particularly high in the United States and Australia, where around one-quarter of the older population have incomes below this level. In all countries apart from the United Kingdom, Belgium and Luxembourg, single older people are more likely to have incomes below this level than are older couples. These differences are particularly great in Australia, Canada, Sweden and the United States. The proportion of all older people with adjusted incomes below this line is greater than among the general population in Belgium, Germany, Luxembourg, Australia and the United States, and less in the other countries.

Table 3.14: Percentage of **individuals** below **proportions** of average equivalent income, selected countries, mid **1980s**

Country	40% line				50% line				**60% line**			
	Single older people	**Older couples**	All older	Total **pop'n**	**Single older people**	**Older couples**	All older	Total **pop'n**	**Single older people**	**Older couples**	All older	Total **pop'n**
United Kingdom	(1.0)	1.5	(1.2)	5.9	[6.8]	9.2	(8.1)	11.9	[23.5]	29.8	(26.9)	22.0
Belgium	(2.0)	5.0	3.8	2.5	[6.4]	12.0	(9.8)	6.3	[14.5]	(21.3)	(18.6)	14.4
France	3.9	2.4	3.1	6.7	(6.8)	5?	(5.9)	12.6	[19.1]	(19.7)	[19.4]	22.3
Germany	(4.8)	3.4	(4.1)	3.4	(11.5)	10.2	(10.9)	8.6	[19.1]	17.3	(18.2)	16.3
Italy	(6.5)	8.0	(7.4)	8.9	[16.5]	14.1	(15.1)	15.9	(29.0)	25.1	26.7	25.7
Luxembourg	(2.3)	4.3	(3.3)	2.2	[9.4]	14.8	(11.9)	6.2	[17.4]	26.0	(21.3)	14.4
Netherlands	0.7	0.0	0.3	4.7	3.3	2.5	2.9	9.1	(3.8)	8.4	6.4	15.3
Australia	(6.0)	5.9	(5.9)	7.5	[39.4]	[23.6]	[30.0]	16.7	(62.5)	55.2	57.6	26.3
Canada	(6.1)	3.4	4.6	7.5	(14.8)	8.6	(11.3)	13.3	[30.5]	(24.9)	(27.2)	21.3
Sweden	1.8	0.3	1.0	4.4	[8.2]	2.0	(4.9)	7.2	[24.2]	(6.7)	(14.8)	11.6
United States	(19.6)	11.0	(15.0)	14.9	(34.0)	17.4	25.2	21.4	43.8	26.0	34.4	28.4

Notes: ( ) - exceeds HBAI sensitivity limits under one equivalence scale.
[1 - exceeds HBAI *sensitivity* limits under two *or more* equivalence scales.
Source: Estimated from LIS data files.

At the 60 per cent level, the United Kingdom's ranking changes. Just over a quarter of older people in the UK have incomes up to this level, which is about the same as in Italy and Canada, but substantially less than in the United States or Australia. At this level, relative low income is more prevalent among the older population than in the general population in all countries except France and the Netherlands.

Another way of considering the sensitivity of estimates of the proportion of the population to the precise choice of an income cut-off is shown in Figures 3.3a and 3.3b. These show the proportions of all older people with incomes between

particular percentages of mean income. The higher the degree of concentration in the incomes of older people, the more sensitive will be estimates of the numbers with low incomes to the choice of a particular low income cut-off. Figure 3.3a shows that the highest degree of concentration of incomes for older people is in the United Kingdom and the Netherlands, although the peak in the Netherlands is between 70 and 80 per cent of average income and that in the United Kingdom is between 50 and 60 per cent of average income. The other countries in this chart show a very different pattern, with France, Germany and Italy having a bimodal distribution over this range. Figure 3.3b shows the same profiles for the non-EC countries. The pattern in Canada is similar to that in the United Kingdom, although the degree of concentration is not so marked. The Swedish profile is also similar to that in the UK, although like the Netherlands, the peak is between 70 and 80 per cent of average income. The degree of concentration in the income distribution of older people is most pronounced in Australia, although at a lower proportion of average income than in the United Kingdom. The pattern for the United States appears to be unique, being much flatter and less concentrated than the other income distributions.

Figure 3.3a: **Proportion of all older people with income by % of mean**

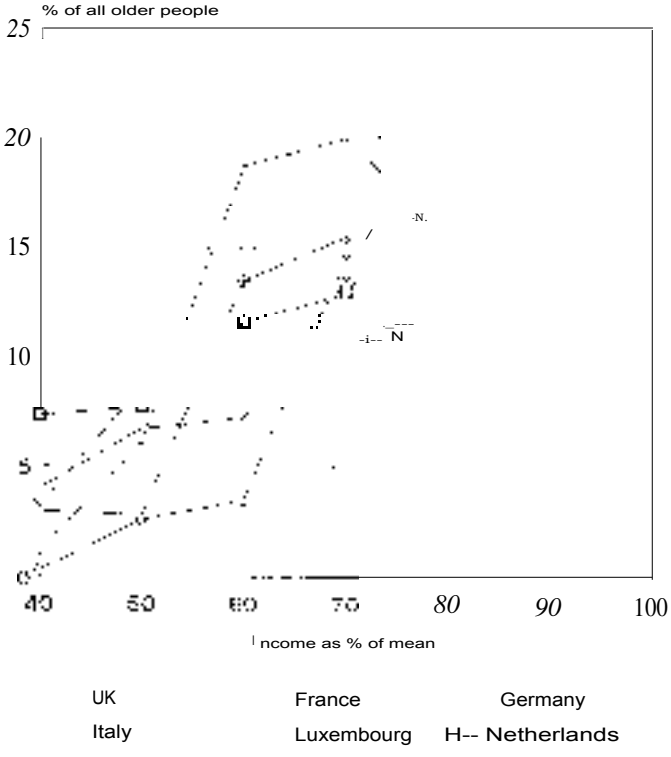


Figure 3.3b: **Proportion** of all older **people with incomes** by % **of mean**

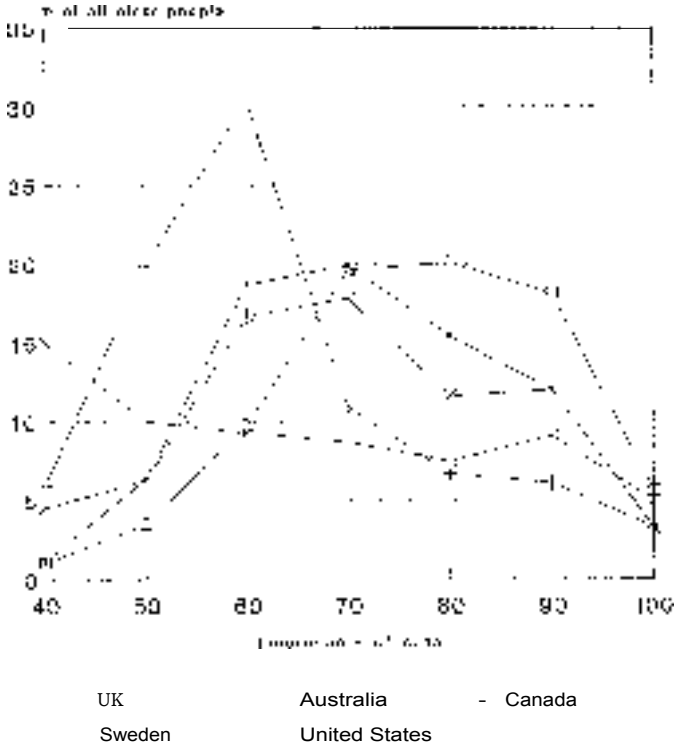


Table 3.15 shows estimates of the relative `risk' of low incomes among the elderly, where the risk factor is calculated by dividing the proportion of each older group with incomes below the specified income levels by the proportion of the total population with incomes below the same level. For example, it can be seen that older people in the United Kingdom are only about 20 per cent as likely as the general population to have incomes below 40 per cent of average incomes, but are about two-thirds as likely to have incomes below 50 per cent of average incomes, and 22 per cent more likely to have incomes below 60 per cent of the average.

At the 40 per cent level, this risk is also low in Sweden, and extremely low in the Netherlands. Also at this level the relative risk of low income is highest for the single older people in Germany and the United States, and for older couples in Belgium and Luxembourg. Changes in the risk ratio between income levels reflect the concentration (or lack of concentration) of the older population between the income lines. For example, the ratio for older people increases significantly between the 40 and 50 per cent line in the United Kingdom, but changes very little in France.

At the 50 per cent level, the low income risk in the United Kingdom is lower than in all countries except the Netherlands and France, and is about the same as in Sweden. The risk is highest in Luxembourg and Australia, and then Germany and the United States. These ratios are highest for single older people in Australia and older couples in Belgium and Luxembourg. At the 60 per cent line, the risk ratio for all older people in the United Kingdom is very roughly the same as in Canada, Sweden and the United States. The extra risk of older people having low income is particularly great for both singles and couples in Australia, for single older people in Sweden, and for older couples in Luxembourg.

Table 3.15: **Risk* of low income for older people, selected countries, mid 1980s**

Country	40% line			50% line			60% line		
	Single older people	Older couples	All older people	Single older people	Older couples	All older people	Single older people	Older couples	All older people
United Kingdom	0.17	0.25	0.20	0.57	0.77	0.68	1.07	1.35	1.22
Belgium	0.80	2.00	1.52	1.02	1.90	1.56	1.07	1.48	1.29
France	0.58	0.36	0.46	0.54	0.41	0.47	0.86	0.88	0.87
Germany	1.41	1.00	1.21	1.35	1.20	1.28	1.17	1.06	1.12
Italy	0.73	0.90	0.83	1.04	0.89	0.95	1.13	0.98	1.04
Luxembourg	1.05	1.95	1.50	1.52	2.39	1.92	1.21	1.81	1.48
Netherlands	0.15	0.00	0.06	0.36	0.27	0.32	0.25	0.55	0.42
Australia	0.80	0.79	0.79	2.36	1.41	1.80	2.38	2.06	2.19
Canada	0.81	0.45	0.61	1.11	0.65	0.85	1.43	1.17	1.28
Sweden	0.41	0.07	0.23	1.14	0.28	0.68	2.09	0.58	1.28
United States	1.32	0.74	1.01	1.59	0.81	1.17	1.54	0.92	1.21

Note: * The 'risk' of low income is defined as the ratio of the percentage of the group with incomes below this level to the proportion of the total population with incomes below this level.
Source: Estimated from LIS data files.

Table 3.16 presents results similar to those in Table 3.14, except broken down by age group. For persons aged 65 to 74 years the proportion of the population with incomes less than 40 per cent of average income in the UK is less than in any country apart from Sweden and the Netherlands. For those aged 75 years or over, the proportion with incomes below this level is lower in the United Kingdom than in any country apart from the Netherlands. In the United Kingdom, Luxembourg, the Netherlands, Australia and Canada the proportion of the population with incomes below 40 per cent of the average falls as age increases between these two age groups, while in other countries it rises.

At the 50 per cent level the ranking of the United Kingdom is affected broadly in the same way as before. That is, the proportion of older people in France with incomes below this level is somewhat less than in the United Kingdom, so that the UK's ranking `slips' slightly. Once again, at the 60 per cent level, the relative position of these age groups in the United Kingdom falls somewhat further in the rankings.

This table can also be used to compare the relative position of age groups more broadly. At the 40 per cent line, the age group most likely to have low incomes in the United Kingdom are children; in Belgium, it is those aged 75 years and over; in France, it is those aged 45 to 54 years; in Germany it is those aged 75 years and over; in Italy it is those aged 15 to 24; in Luxembourg it is 65 to 74 year olds; in Australia, Canada and the United States it is children, and in Sweden and the Netherlands it is disproportionately 15 to 24 year olds[9]. At the 50 per cent line, these positions are unchanged for all countries, except Australia, where those aged 75 years and over have the highest proportion of incomes below this level. However, the proportion of different age groups with incomes below 60 per cent of average income is highest for those aged 75 years and over in the United Kingdom, Belgium, Germany, Australia, Canada, and the United States, and it is highest in Luxembourg for those aged 65 to 74 years. In France, Italy, the Netherlands and Sweden, in contrast, the proportion of the population with incomes below 60 per cent of the average is highest in the 15 to 24 year age group.

[9] In part this may be an artefact of the Swedish dataset, as single people sharing with others are classified as separate households.

Table 3.16: **Percentage of individuals below proportions of average equivalent income by age group, selected countries, mid 1980s**

	Age group								
	0-14	15-24	*25-34*	35-44	*45-54*	*55-64*	*65-74*	*75+*	Total
1. *40% line*									
United Kingdom	8.5	5.9	6.6	6.5	6.3	4.5	1.4	0.7	5.9
Belgium	2.0	3.2	1.7	2.0	2.3	2.7	3.7	4.3	2.5
France	6.1	9.8	4.7	4.8	10.9	9.5	2.2	2.3	6.7
Germany	*3.6*	*4.9*	3.4	1.8	2.3	3.0	2.9	5.9	3.4
Italy	9.2	12.6	7.7	7.0	9.3	9.0	*6.2*	*6.6*	*8.9*
Luxembourg	1.7	3.3	1.0	1.5	2.1	3.1	3.9	2.4	2.2
Netherlands	4.9	11.2	3.9	3.4	3.7	3.7	0.1	0.0	4.7
Australia	10.4	7.7	6.0	7.4	6.0	6.6	6.1	3.5	7.5
Canada	10.0	9.3	5.8	7.1	6.7	8.0	3.8	3.0	7.5
Sweden	2.1	16.1	4.1	2.9	3.0	2.8	0.5	1.2	4.4
United States	22.2	17.7	11.2	10.8	9.9	11.6	12.6	18.1	14.9
2. *50% line*									
United Kingdom	17.1	11.0	12.5	11.2	11.0	8.1	8.2	8.4	11.9
Belgium	5.0	8.4	4.0	5.9	5.7	6.4	9.1	11.3	6.3
France	13.4	18.1	8.8	10.2	16.8	16.1	5.0	4.2	12.6
Germany	9.4	11.2	7.3	5.1	6.6	7.3	8.2	15.1	8.5
Italy	16.2	22.3	12.7	12.4	16.6	15.2	13.0	16.4	15.9
Luxembourg	5.5	7.0	3.8	3.5	6.1	8.5	13.1	8.7	6.2
Netherlands	9.2	19.5	6.1	7.3	9.5	9.2	2.1	1.4	9.1
Australia	19.5	13.8	11.8	12.9	12.1	17.5	30.3	30.4	16.7
Canada	18.0	15.1	10.6	11.6	11.1	13.6	9.7	9.7	13.3
Sweden	4.3	21.0	6.1	5.0	4.7	4.6	2.5	7.7	7.2
United States	30.4	22.8	16.9	15.1	13.6	17.6	21.2	32.3	21.4
3. *60% line*									
United Kingdom	29.7	18.2	20.2	17.8	17.1	16.6	25.9	31.0	22.0
Belgium	13.9	19.0	8.9	14.6	12.6	12.7	18.7	20.1	14.4
France	24.4	28.8	15.3	18.3	24.8	25.3	17.4	20.0	22.3
Germany	21.2	20.6	15.5	13.8	11.4	13.0	14.1	23.1	16.3
Italy	26.4	32.8	20.1	20.7	25.7	26.7	23.4	31.2	25.7
Luxembourg	17.9	13.9	9.8	11.8	11.7	15.5	22.3	19.3	14.4
Netherlands	18.5	27.7	11.3	12.8	14.9	13.2	5.2	4.6	15.3
Australia	27.9	19.6	17.0	18.7	17.8	31.1	57.9	61.0	26.3
Canada	27.0	22.4	16.5	17.8	16.2	22.1	23.0	30.6	21.3
Sweden	7.0	26.3	8.6	7.3	7.1	7.4	9.1	23.8	11.6
United States	38.7	31.3	23.3	22.0	17.9	22.3	29.0	44.3	28.4

Source: Estimated from LIS data files.

Single older women have often been considered to be a group vulnerable to low income. Table 3.17 shows results for single[10] persons aged 65 to 74 and 75 years and over, distinguishing between men and women. The proportion of single women aged 65 to 74 years with incomes less than 40 per cent of the average is lower in the United Kingdom than in any other country apart from Sweden and the Netherlands, and for single women aged 75 years or over, the United Kingdom has the lowest proportion below 40 per cent of average income of any country apart from the Netherlands and Belgium. Among 65 to 74 year olds the proportion of women with incomes below this level is higher than for men in France, Luxembourg and the United States, and is about the same in Australia. In other countries, this proportion is less. For single women aged 75 and over, the proportion with incomes below the 40 per cent line is somewhat higher than for men in the United Kingdom, France, Luxembourg, Australia, Canada, Sweden and the United States.

[10] These are all single persons, either divorced, separated, widowed or never-married.

Table 3.1 Percentage of single older persons below proportion of average equivalent income, by age and sex, selected countries, mid **1980s**

Country	40% line				50% line				60% line			
	65-74		75+		65-74		75+		65-74		75+	
	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females
United Kingdom	.9	0.9	0.7	1.1	7.0	8.6	3.4	6.5	19.7	23.6	22.3	27.4
	3.9	1.4	2.1	0.9	6.8	6.1	7.4	5.8	16.5	15.5	15.8	13.5
	1.6	3.4	2.8	3.3	5.3	5.5	4.7	6.0	13.6	16.4	22.1	20.3
	2.8	2.4	11.0	5.8	2.8	10.1	11.0	14.7	13.0	14.6	15.7	23.5
It	7.7	4.6	19.0	5.2	12,6	14.4	28.5	17.2	23.6	26.8	373	33.3
Luxembourg	0.0	3.6	1.4	1.9	8.9	9.3	5.7	10.0	16.7	17.5	8.9	19.3
Netherlands	0.0	0.5	0.0	0.0	2.3	2.6	4.4	0.9	2.3	3.5	4.4	0.9
Australia	5.7	5.9	1.9	3.4	33.8	37.2	27.1	35.8	65.7	64.1	59.2	60.3
Canada	9.2	4.4	2.3	4.0	17.0	9.1	10.9	11.4	27.2	26.0	22.2	34.6
Sweden	0.5	0.5	0.6	2.5	1.9	5.3	21.0	6.4	4.8	26.4	36.0	26.9
United States	13.5	19.7	17.8	20.4	23.6	34.1	30.8	37.8	33.2	43.0	39.0	49.5

Source: Estimated from LIS data files.

At the 50 per cent level, however, the proportion of single women with relative low incomes is higher than the proportion of men in either age group in the United Kingdom, France, Germany, Luxembourg, Australia and the United States. It is also higher for women in the 65 to 74 age group in Italy, Sweden and the Netherlands. In contrast, single older men are more likely than single women to have relative low incomes in Belgium and Canada; and in Italy and Sweden this difference is particularly great for those aged 75 years and over. At the 60 per cent level, single women are more likely to have relative low incomes in most countries and age groups. The exceptions are women in Belgium and women aged 75 and over in the Netherlands, Sweden, France and Italy (although for the latter two countries the proportions are fairly similar), and women aged 65 to 74 in Australia and Canada (although again the differences are small).

Table 3.18 calculates risk rates for single women aged 75 years and over, a group usually thought to be particularly vulnerable to low income. For purposes of simplicity, results are calculated only for the proportion of single older women with incomes below 50 per cent of average equivalent income. The first column of figures expresses the ratio between the extent of low income for this group compared to single women between 65 and 74 years of age. That is, does the risk of low income increase with age? These figures suggest that there is a modest increase with age in most countries, with the largest increases being in Germany (50 per cent) and Canada (30 per cent). The ratio is broadly stable in Belgium and Australia. In the United Kingdom and the Netherlands, in contrast, single women over 75 years of age have a lower risk of relative low income than younger women.

The second column of figures compares the situation of single women over 75 years of age to those of men of the same age. In most countries, the risk of low income is greater for women than for men of this age, with the exceptions of Belgium, Italy, the Netherlands and Sweden, where it is greater for men, and Canada where it is about the same. This relative risk is greatest in the United Kingdom, followed by Luxembourg. The third column compares single women over 75 to all older couples. In the United Kingdom, Belgium, Luxembourg and the Netherlands, single women over 75 have a lower risk of relative low income than couples; in all other countries the risk is higher, and particularly so in Sweden. The fourth column compares this group with the average for the total population in each country. This suggests that single women over 75 have the lowest relative risk of low income in the Netherlands, the United Kingdom and France, and the highest in Australia. It is also apparent that by any of these criteria, the risk of low income for this group is particularly low in the Netherlands.

Table 3.18: ***Risk of*** **low** income **for single** women 75 **years of age and over, selected countries, mid 1980s**

Country	Risk ratio`		3	4
United Kingdom	0.8	1.9	0.7	0.5
Belgium	1.0	0.8	0.5	0.9
France	1.1	1.3	1.2	0.5
Germany	1.5	1.3	1.4	1.7
Italy	1.2	0.6	1.2	1.1
Luxembourg	1.1	1.8	0.7	1.6
Netherlands	0.3	0.2	0.3	0.1
Australia	1.0	1.3	1.9	2.2
Canada	1.3	1.0	1.3	0.9
Sweden	1.2	0.3	4.0	0.9
United States	1.1	1.2	2.1	1.8

Note: * The risk of low income is defined as the ratio of the percentage of single women 75 years and over with incomes below 50 per cent of average income to the corresponding percentage of:

1. Single women 65 to 74 years.
2. Single men 75 years and over.
3. All older couples.
4. The total population.

Source: Calculated from earlier tables.

3.9 `Absolute living standards

The discussion to this point has concentrated on income measures derived from an analysis of the relative incomes of older people within each country. It is also possible, however, to base inter-country comparisons on measures held constant in terms of their real purchasing power. This gives an indication of the 'absolute' living standards of older people in different countries.

Exchange rates are too volatile to provide an accurate indicator of purchasing power, so in common with previous research, we use OECD purchasing power parities (PPPs) in comparisons of this sort. PPPs provide measures of the cost in each currency of buying the same basket of goods and services in each country. In order to make this adjustment all amounts have first been inflated or deflated to their 1985 value and then adjusted to a common currency. However, a further step is required since amounts expressed in 1985 terms would not necessarily be meaningful currently. We have therefore taken the mean income of the total UK population as the base or 100. Once all other amounts have been adjusted by PPPs they are then expressed as proportions of this base.

Table 3.19 shows the results of this procedure. These results can be interpreted as follows. To take the example of France, the average income of the total French population is estimated to be I1 per cent higher than that of the average income of the total UK population. The average income of all older French people is 12 per cent higher than the average income of the total UK population, and nearly 30 percentage points higher than that of the average older person in the UK.

Thus, these results give a rather different picture of how well-off older people are in different countries. For example, older people are estimated to be best-off on average in the United States, Canada, Luxembourg and then France, while on the relative measure in Table 3.5, the corresponding ranking was the Netherlands, France, Germany and then the United States. Again, Table 3.6 showed that the poorest quintile of older people were worst-off in the United States, but on the measure in this table, it is in Italy that low income older people are worst-off.

Table 3.19: **Equivalent disposable incomes of older people and total populations, adjusted by PPPs, selected countries, mid 1980s**

	Older People				Total Population		
	Median	**Mean**	**10th** percentile	**90th** percentile	**Median**	**Mean**	**10th** percentile
United Kingdom	72	84	51	131	88	100	47
France	92	112	61	184	96	111	51
Germany	90	104	52	159	95	106	55
Italy	73	82	41	133	78	90	38
Luxembourg	103	114	57	184	111	123	68
Netherlands	72	86	57	136	71	83	43
Australia	60	78	48	133	93	105	46
Canada	102	122	68	205	124	137	61
Sweden	76	82	54	117	95	97	55
United States	119	145	52	270	131	149	48

Note: All amounts are deflated/inflated to 1985 values and then adjusted by Purchasing Power Parities (PPPs) to a common currency. The average (mean) equivalent income of the total UK population is set as the base (100) and all other figures expressed as percentages of that base. The mean equivalent income of the UK population in 1986 was just under £7,700 or £7,445 in 1985 terms.

Source: Estimated from LIS data files.

Two specific results in Table 3.19 are striking. In absolute terms, the incomes of the tenth percentile of older people are by far the highest in Canada. It is also notable that the top decile of older people in the United States are by far the most prosperous in absolute terms, having incomes more than twice as high as the top decile of older people in the United Kingdom. If nothing else, this explains why more older Americans are seen as tourists in the countries in our study.

3.10 Summary and discussion

This chapter has provided a new analysis of the distribution of net cash incomes of older people. Two findings are of particular interest. First is the substantial difference between the extent of the relative low income among older people in the UK in the first and second wave studies. It has been suggested that this probably reflects both a real improvement in the relative economic circumstances of older people in the UK, plus the effects of some technical factors affecting the definition of net disposable income. The importance of technical issues should be borne in mind in considering all of these results.

The second finding of particular interest is the apparent variety of outcomes in different countries. As noted by Esping-Andersen (1990, p. 56) earlier LIS research has found `startling cross-national differences' in the extent of poverty. The extent of poverty among older people around 1980, for example, ranged from less than one per cent in Sweden to 11 per cent in Germany, 24 per cent in the United States, and 29 per cent in the United Kingdom. The extent of differences in outcomes in different welfare states has also been emphasised by Ringen (1987), who argues that 'the most important finding of the Luxembourg Income Study is the degree of difference between the industrial nations, a finding which contradicts and refutes the previous impression of similarity' (1987, p.185). In this report, using LIS data for the mid-1980s, it is estimated that the proportion of older people with incomes less than 60 per cent of average income ranged from around six per cent in the Netherlands and 15 per cent in Sweden to 34 per cent in the United States and 58 per cent in Australia.

These differences are of interest from several perspectives. According to Castles and Mitchell, `the centrality of the welfare state in the comparative public policy literature drew its rationale from the supposed impact of government intervention on distributional outcomes in advanced societies' (1992, p.2). That is, it is distributional outcomes that are most relevant to questions about the effects of different welfare state regimes. Understanding the explanations for these outcomes could also be useful within specific countries when considering social policy

reforms modelled on the experiences of other countries. This is also true in the context of pressures for convergence of social policies in the countries of the European Community, whether these pressures are direct (Cram, 1993) or because of the convergence criteria for economic and monetary union. At a fundamental level, differences of this apparent magnitude must raise questions about the effectiveness of social policies in different countries, or questions about the political process in different countries. For example, how can Australians accept a situation in which more than half of people in retirement have incomes below 60 per cent of the average? If incomes of this level are close to poverty, then the fact that more than half of people in retirement are in near poverty appears to be a decisive refutation of the median voter hypothesis (in this context at least).

While the social factors associated with these outcomes may not necessarily be well understood, there are some obvious explanations for these marked differences in the extent of income inequality and poverty between countries. The level of government spending and taxing varies enormously between countries. Those countries with high levels of spending (Sweden, the Netherlands) have much lower measured poverty than those countries with low social spending (the United States, Australia)." The outcomes described above are therefore not unexpected, and suggest that greater equality can be achieved by expanding the role of the state, and conversely that reductions in government spending or the role of the state are likely to increase inequality (Pestieau, 1992).

If this is true, findings of this sort are relevant to current policy concerns in several countries, particularly the strategy of targeting of benefits. Calls for greater means-testing of benefits are usually explicitly justified on the basis that need can be more efficiently met if resources are directed to those in the lowest income groups and redirected away from those in higher income groups. If those countries with means-tested benefit systems (e.g. Australia) have much higher poverty than countries with universal benefits (the Netherlands), then the explicit rationale for targeting - or targeting in its Australian form - collapses. The seeming failure of means-tested benefit systems to achieve their objective of reducing poverty can be explained in several ways. Barr (1990) has pointed out that the degree of redistribution achieved by a tax-benefit system is related to:

- the progressivity of the structure of taxes and benefits;
- the 'quantum' of taxes and benefits; and
- ® other influences on taxes and benefits. [12]

The progressivity of the structure of benefits is determined by whether the system is means-tested, flat-rate or earnings-related. By definition, in a means-tested system the benefits provided to the poorest are greater than the average benefit provided. A universal, flat-rate system provides benefits that are of equal value to all recipients, while under an earnings-related system, average benefits are greater than minimum benefits. It follows that for *a given amount of spending,* benefits to the poorest will be greater under a means-tested system than under a universal benefit, which in turn will provide more generous payments to the poor than an earnings-related system. But the degree of redistribution or poverty alleviation is not only related to the progressivity of the structure of taxes and benefits, but also to the quantum of redistribution - a means-tested programme with a highly redistributive formula will have little redistributive effect if spending is low [13] (Barr, 1990). (Strictly speaking, however, the degree of redistribution is not solely the outcome of the benefit level, but reflects the *difference* between benefits and taxes, expressed as a proportion of income or resources.) This point is emphasised in a comparative

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[11] Following Ringen (1987), we distinguish between states with high and low levels of social spending and taxes, rather than between institutional and residual welfare states.

[12] Other influences include the incidence of unemployment by income class, and differences in life expectancy by income, as well as factors such as take-up of benefits.

[13] This is true more generally. The distributional effects of any income source or component will depend on its distributional profile and its size. This issue is discussed below with reference to income packages.

perspective by Barr (1990), who notes that Sweden has a redistributive formula and high benefit spending, which produces low poverty rates. In contrast, Australia has a redistributive benefit formula, but `the impact on poverty and inequality, however, is limited because benefit levels are low by international standards, making Australia a low spender...' (1990, p. 85).

This argument can be put another way. Benefit systems that are not progressive can help the poor if the level of benefits are sufficiently high (Castles and Mitchell, 1992). According to Baldwin:

> . . .In nations where the state became the main insurance broker of the bourgeoisie, in contrast, the disadvantaged gained from clinging to the coat tails of the favoured. The middle classes arranged things first and foremost for themselves, the unfortunate were the beneficiaries of a comparatively successful trickle-down. . .In the long run, the unfortunate have gained most from those welfare states securely anchored in the interests and affections of the bourgeoisie
> (Baldwin, 1990, p. 298).

Baldwin does not specify the mechanisms through which this paradoxical trickle-down work, only noting that where there have been calls for lower welfare spending, it is usually the poor who have suffered, and that reformers in small welfare states such as the United States have suggested the circumstances of the poor could be improved if the middle class were given a stake in the welfare state.

Studies which do consider the mechanisms through which such protection from poverty might work include Castles and Mitchell (1992), who suggest that means-testing may dissuade the better-off from supporting adequate benefits for the poor. Palme (1990) argues that comparatively unequal public pensions do not necessarily produce the most unequal distribution of final incomes. Citing Kangas and Palme (1990), he notes that among the elderly income from sources other than public pensions tend to be even more unequally distributed. 'Thus, there is a paradox here in the sense that comparatively unequal public pensions might produce the most equal income distributions by crowding out even more unequal income sources' (1990, p. 154).

Despite evidence of crowding out, however, the existence of a mechanism is not sufficient to explain the process. The notion there has been a benign trickle-down to the poor in the larger welfare states has several unsatisfactory features. The central problem is that such a trickle-down still requires real redistribution to the poor. This is difficult to account for unless the middle classes in the larger welfare states become more altruistic than those in the smaller welfare states, or they have less political power, or they do not notice that a higher proportion of their taxes and contributions goes to the poor. In this sense it does not matter that the middle classes also receive benefits from being part of a large welfare state - redistribution is redistribution. If redistribution is greater in such a welfare state, then the middle classes and the more prosperous must be paying for it in lower disposable incomes, unless such a system has positive effects on national productivity and economic growth. Alternatively, lower poverty might be achieved if benefits were more effective at redistributing across the life cycle for the working class. This would imply that the working class were paying for their own benefits in retirement, sickness or unemployment, through high levels of taxation when in work. Such a process is plausible, but it does not seem accurate to describe it as trickle-down, since most of the redistribution would be horizontal rather than vertical.

There is another possible explanation for the failure of targeting as a means of reducing poverty. This is that the failure is apparent and not real, or at least that differences between countries in poverty rates are not as marked as appears from the previous discussion. This implies that the results discussed above may be an artefact of the standard method used to measure poverty and income redistribution.

Chapter 4 Broadening the Concept of Resources

4.1 Analysing income distribution data - the standard method

All of the results presented to this stage reflect the adoption of a particular approach to the analysis of income distribution data. Following Ringen (1987), this will be called the standard approach. The question that this chapter of the report seeks to address is what are the consequences of adopting this particular analytical framework. Figure 4.1 compares two versions of the standard approach. One is that employed in most studies using the Luxembourg Income Study data, and the other is used by the UK Central Statistical Office (CSO, 1991b) in its series of Fiscal Incidence Studies. In the standard LIS approach, income from wages and salaries, self-employment and property sum to `factor incomes'. Factor incomes plus occupational pensions give 'market incomes'. Public transfers, private transfers, and any other cash income, when added to market income, produce `gross income'. Gross income minus personal income tax and employees' social security contributions gives `net cash income'. The degree of redistribution effected either by public transfers or by income tax and national insurance contributions can be measured in seveal ways. These include calculating the relative change in income levels for different individuals or by calculating income shares at different stages in the process described above.

Figure 4.1: **Comparison of different income concepts**

	Luxembourg Income Study		**Fiscal Incidence Studies**
	Wages and salaries + Self-employment income + Property income		Earnings from employment and self-employment + Occupational pensions and annuities + Investment and property income + Other income (eg alimony)
2.	Factor income + Occupational pensions	2.	Original income 'before government intervention' + Cash benefits
3.	Market income Child benefits, means-tested benefits, and other cash payments (total cash benefits) + Private transfers Other cash income	3.	Gross income Income tax, employees NIC and rates
4.	Gross income Income tax and payroll tax (employees)	4.	Disposable income Indirect taxes (VAT etc)
5.	Net cash income	5.	Post-tax income Benefits in kind (health. education etc)
		6.	Final income

Source: O'Higgins, Schmaus, and Stephenson, 1990, pp. 30-31.

Source: Central Statistical Office, 1991b, p. 85.

Like the LIS methodology, the framework of the Fiscal Incidence Studies is well known and widely accepted. The CSO sets out its methodology in the way also shown in Figure 4.1. Earnings from employment and self-employment, occupational pensions and annuities, investment and property income, plus other private income sum to `original income'. Original income plus government cash benefits gives 'gross income'. Apart from the fact that gross income is arrived at in a different order, this measure is identical with gross income in the LIS. Gross income minus income tax, employee's social security contributions and local government rates (or the community charge in later years) gives `disposable income'. Disposable income minus indirect taxes gives `post-tax income', which when added to benefits-in-kind produces `final income'. Therefore, the Fiscal Incidence Study concept of final income is a more comprehensive measure of living standards, that includes all impacts covered by the LIS 'net cash income' measure, plus the effects of rates, indirect taxes and other government social spending.

4.1.1 Limitations of the standard method

As noted by Ringen (1987, p. 172), the standard method provides a simple but ingenious and flexible model. Yet despite its widespread use, there are many well-known problems with this approach, in both the variants shown in Figure 4.1. The major problems include:

- the counterfactual against which redistribution is assessed;
- limitations in accounting for government redistributive activity;
- the time horizon in which redistribution and living standards are measured; and
- the treatment of the relationship between public and private provisions.

4.1.2 The counterfactual

The problem of the counterfactual is fundamental. The simple frameworks set out in Figure 4.1 presuppose that original income exists prior to government intervention, and that the effectiveness of government programmes can be measured by comparing the distribution of income `before' and `after' government activity. The standard approach involves a set of statistical calculations that assume that individual behaviour is unaffected by the existence of welfare programmes. It is far more plausible, however, to consider that as far as they are able individuals make decisions about income generating activities within the institutional framework in which they live. The scope and form of their other income sources will be influenced by the structure and level of benefits and taxes, and *vice versa*. This adaptive behaviour takes place in many areas, including wage determination, tax avoidance and evasion, the formation of asset portfolios (to minimise tax and maximise benefit receipt), and other behavioural responses to cash benefits. Indeed, government decisions about benefits and taxes are likely to be influenced by their knowledge of the ways in which individuals and groups have adjusted their behaviour. In some cases, governments try to circumvent individual behaviours that are contrary to explicit policy, and in other cases government policy will be based on tacit recognition that some behaviours reflect deep-seated social attitudes or institutions that it is either not feasible or electorally acceptable to attempt to change.

Despite these basic questions about the meaningfulness of the standard method, the framework is useful as a heuristic device that sets out the main components of the welfare state, and assists in the logical analysis of possible impacts of particular social programmes. Moreover, the comparative analysis of public policy may come closer to resolving the problem of the counterfactual than any other form of analysis apart from an applied general equilibrium model. This is because there are marginal differences between some welfare states, as well as differences that are very far from marginal. For example, among the countries in our study, general government outlays range from around 34 per cent of Gross Domestic Product in Australia to 56 per cent in the Netherlands and 61 per cent in Sweden (Saunders,

1992). It may not be possible to answer the question vat are the effects of the welfare state?' But if we can identify the differentia of welfare states that vary in their scope to this extent, then we may be as close to identifying true counterfactuals as is possible.

The other issues noted 'Dove raise problems that are more limited in their nature, although not less in p0: for this. Many of prob'c- :s ~.errelated. For ex ale, part of the the lack e the standard de` ~itic i of income is to the limited c ::~ ,g of lent activity. These limitations in turn are :-elated to the treatment of the re le c. private sector arrangements in determining welfare. Because these problems are interrelated, it is difficult to present them in a straightforward manner. The discussion that follows attempts to identify the most important points. Overall_ however, the main effect of these problems is to overestimate the degree of inequality in the primary distribution and to overestimate the redistribution achieved by government programmes (Layard, 1977; Reynolds and Smolensky, 1977). This report also argues that these problems exaggerate differences in outcomes between countries. In particular, the standard method tends to overstate the measured impact of government programmes in states with high levels of public spending and taxes.

4.1.3 Accounting for government

The effects of government policy choices are only partly incorporated into the standard framework. This represents a severe problem with the method. particularly when it is used to measure the effects of government activities on income distribution. These gaps arise in several ways. The major prob rr discussed in this section is simply that most income surveys only include inform., :ion on *cash* benefits and direct taxes, which correspond to a small fraction of total spending and taxing. A second gap is a result of the fact that policies can be implemented through regulations of various sorts rather than direct provision, but it is generally only direct provision that is included. This point has been made by Klein (1985), who argues:

> The distinction between public and private spending is therefore arbitrary insofar as it ignores the role of government in determining the latter. And to the extent that countries differ in their mix of public expenditure and publicly induced private spending, comparisons that rest exclusively on the former may yield misleading results.

A further problem is related to the assumption that government policies are always explicit. Rainwater, Rein and Schwartz (1986) have suggested that much social policy is tacit. Identification of tacit social policy means starting not from specific programmes, but with outcomes, and then tracing government activities which contributed to creating the situation that exists.

Figure 4.1 provided two types of accounting framework for assessing the redistributive efforts of governments and for measuring the outcomes of these efforts. Most poverty studies carried out with the L.IS data use the first variant of the standard approach shown in Figure 4.1. This measures disposable cash income, and does not take account of the impact of benefits in kind or of indirect taxes. The obvious question that arises from this comparison of alternative concepts is whether a different measure of incomes would change conclusions about the extent of redistribution in different countries or about the outcomes of redistributive policies. The answers to these and related questions will depend on the extent to which there is divergence between these income measures in different countries. These differences will reflect the relative weights given to cash transfers and other public spending, and to direct taxes and other forms of taxation.

Social expenditure includes direct public expenditure on health, education and welfare services, as well as government transfer payments. The ratio of spending on transfers to total social spending varies widely between countries, with the overall OECD average being 56.7 per cent, and the range being from 42.5 per cent in

Finland to 78.8 per cent in Spain (OECD, 1988b, p.10). If we define social spending as the `redistributive effort' made by different societies (Eurostat, 1992), then the standard income surveys of the types included in the LIS encompass less than half of that effort in Australia, Canada, Denmark, Finland, Japan and the United States, nearly two-thirds of the effort in Austria, Germany and Italy, and around three-quarters of the total effort in the Netherlands and Spain.

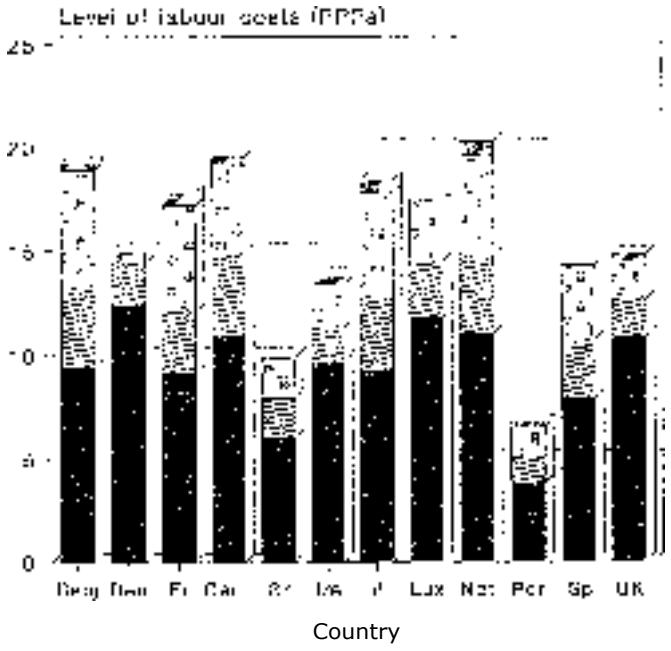
The biases suggested by these differences in the composition of social spending are reinforced when considering that standard income surveys usually only include direct personal taxes. The proportion of total tax revenues in OECD countries collected as personal income tax and employees' social security contributions (i.e. the taxes included in the LIS data and similar income surveys) range from 24.6 per cent of total revenue in France to 53.0 per cent in Denmark. Apart from France, low proportions of total taxes (less than 30 per cent) are included for Greece and Spain. Around 45 per cent or more of total taxes are included for Australia, Denmark, Finland, Germany, New Zealand, Switzerland and the United States.

Analysis based on disposable cash incomes will therefore tend to underestimate the quantum of redistribution in different countries, but will tend to overestimate the overall progressivity of the tax-benefit structure. This is because cash transfers have generally been found to be more redistributive than benefits in kind, while direct taxes are more progressive than indirect taxes (Saunders and Klau, 1985). The overall redistributive impact of social spending and taxation can be considered to be the weighted average of the redistributive impacts of the separate components of taxation and social spending, where the weights are calculated as the shares of each component in total social spending and taxation. This issue is further complicated by the fact that in a number of countries where cash benefits are a lower proportion of total social spending, direct taxes are a higher proportion of total taxes. This implies that the biases will tend to be offsetting in these countries, but reinforcing in others.

Different taxes have different distributional implications, as well as having particular effects on the size of welfare spending. Countries with high levels of general consumption taxes such as VAT will appear to have higher benefit levels in the standard approach. For example, the forthcoming extension of VAT to fuel and power in the United Kingdom will be accompanied by a compensation package for recipients of benefits. Most of this increased spending will simply offset the higher level of indirect taxes, and would not represent more generous and redistributive benefits. In the standard approach, these higher benefit levels are taken into account, but no international comparative research has taken account of the different levels of consumption taxes. But unless comparisons across countries include the effects of indirect taxes, this `churning' will make countries with high levels of consumption taxes look more equal than countries with low indirect taxes.

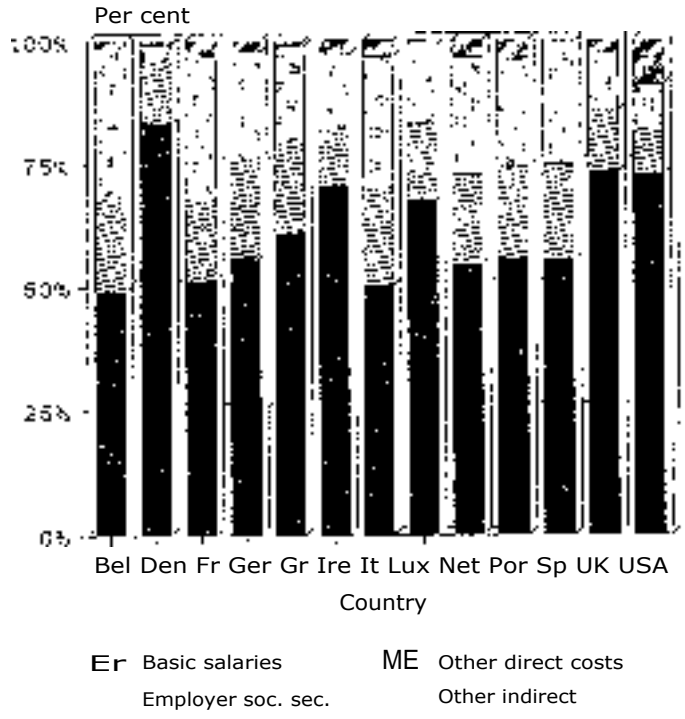
A major gap in the standard framework is the non-inclusion of employer social security contributions. Among OECD countries, these are insignificant in Australia, Denmark, Iceland and New Zealand, but provide more than 20 per cent of total tax revenue in Belgium, France, Italy, Spain and Sweden. Given that these contributions are notionally paying for a large part of social security spending, an assessment of their distributional impact is justified. The incidence of employer contributions is controversial (Central Statistical Office, 1991b), but one straightforward approach is to assume they are incident on wages (Ringen, 1991). On this assumption, Figures 4.2 and 4.3 show the level and structure of labour costs in industry in EC countries (Eurostat, 1992) and the USA in 1988. In Figure 4.2, hourly labour costs have been adjusted to ECUs using purchasing power parities (PPPs). Apart from differences in the level of national income, Figure 4.2 suggests that most of the difference between the absolute level of labour costs in different countries is caused by differences in employer social security contributions. Figure 4.3 also shows that other indirect costs (fringe benefits) are large in the United States.

Figure 4.2: Level *of* labour *costs in* industry, European Community, *1988*



Source: Eurostat (1992)

Figure 4.3: Structure *of* labour costs *in* industry, European Community and United *States,* 1988



Source: Eurostat (1992)

In the standard framework, earnings are composed of basic salaries and other direct costs (premiums, bonuses, and payments for days not worked). Direct taxes are generally paid out of this `gross income', and benefit replacement rates are usually calculated either as a percentage of this gross income or on the basis of gross income minus income tax and employee social security contributions. But in con: - ° st to other taxes such as sales taxes, employer social security contributions shotul.' be added to gross income rather than subtracted from disposable income. If rates were calculated as a p ~ t „ ; tee of total gross labour costs - since benefits are being paid for by employer con ributions as well - then the level of replacement rates would fall significantly in Belgium, France and Italy, for example, but would fall very little in Denmark. On this basis, it could be expected that replacement rates in Sweden would be affected in the same way as in France, for example, while replacement rates in Australia would be unaffected. The relative circumstances of beneficiaries and other low income groups in income surveys would not be affected if employer contributions were treated as part of gross earnings and as offsetting taxes, since disposable incomes are not directly affected by this process. Comparisons of income distribution 'before' and `after' taxes and transfers (Mitchell, 1991a) would be affected, however, since the degree of inequality in original income would change, as would the measured effectiveness of different tax-transfer systems.

There are further complicating factors. It is customary in the analysis of specific policy changes to adopt a 'balanced budget' approach, under which the budgetary cost of any policy initiative is balanced by some proposal for financing the additional required expenditure. The redistributive impact of any change is calculated as the net impact of the new benefit and the new taxes required to finance it. This approach has generally not been followed in international comparative research, although without any particular justification for the approach adopted. Table 4.1 shows that in most countries in the LIS data base, average social security transfers are less than half of direct taxes. In Sweden and the United Kingdom, however, average social security benefits and average direct taxes are nearly in balance. In France, on the other hand, average social security benefits are more than twice as high as average direct taxes. This implies that in the French microdata, benefits are being received which are apparently not being paid for. This is problematic. If the taxes actually needed to finance social security benefits in France are raised less progressively than are direct taxes, then the redistributive impact of Government taxing and spending programmes in France may be over-estimated. On the other hand, employer social security contributions are very important in the French tax structure. These taxes may be less progressive than direct taxes for those of working age, but if they are incident on wages they may be progressive over the income distribution as a whole.

Initially, it may seem desirable to balance spending and taxing in microdata. Broadening the scope of the social programmes taken into account would tend to move towards this balance in most countries in LIS. In Sweden and the United Kingdom, this would mean that social spending would probably exceed taxes, while in France it would exacerbate the existing imbalance. An alternative is to simulate a balance by either scaling up or scaling down observed tax payments to equal observed benefits (Harding, 1992). Ideally, this would be a scaled version of the entire tax system, in order to take account of the differences in the progressivity of the different components of the overall whole. There is a further problem, however, that some components of government spending are already included in income microdata, but not measured as reflecting government policies. These include the incomes paid to civil servants, and the wages and salaries of employees of the education and health services.

Table 4.1: Ratio of social security transfers to taxes in LIS **data**

Country' and Year		Transfers as % of taxes'
Australia	1981-82	43.6
	1985-86	41.6
Canada	1981	59.7
	1987	57.9
France	1979	239.4
	1984	277.5
Germany	1981	*76.9*
	1984	75.0
Netherlands	1983	60.2
	1987	54.5
Norway	1979	55.8
Sweden	1981	99.0
	1987	97.2
United Kingdom	1979	101.8
United States	1979	39.1
	1986	38.6

Notes: 1 There are no gross income data for Italy or Luxembourg, and taxes therefore cannot be estimated.
2 Taxes are calculated as:cca gross minus mean net income.
Source: Estimated from LIS data

A similar issue is raised by the different states of general government balances in different countries. For example, in 1989 the general government balance ranged from small surpluses in Germany, the United Kingdom, Australia and Norway (between 0.2 per cent and 1.6 per cent of GDP), to very substantial deficits in the Netherlands (5.2 per cent of GDP), Belgium (6.3 per cent), Italy (10.2 per cent), and Greece (18.4 per cent of GDP) (Bradshaw, Ditch, Holmes and Whiteford, 1993). Budget deficits in particular years may not have long term implications if balance is achieved over the cycle. However, the large deficits in the Netherlands, Belgium, Italy and Greece in 1989 were undoubtedly structural. It is difficult to account for large structural deficits in the frameworks set out in Figure 4.1. In a sense, a government deficit is like a transfer from outside the conventional framework of distribution and redistribution. Money is being spent, which is not being raised. A deficit allows spending - including social spending - to be higher than it would otherwise be, or taxation to be lower than it would otherwise be. Not all of a deficit can be interpreted as being related to social spending (although recent experience in Italy suggests that reductions in deficits may have very significant implications for social expenditure). This suggests that the distributional implication of government budget deficits is a subject that could well reward further analysis. It can tentatively be suggested that the average level of living in countries with substantial deficits will be higher than the `true' circumstances could support. It is also possible that the level of inequality is reduced, depending upon the ways in which the deficit is notionally being spent. What is crucial is what happens in the long run.

In summary, the main issue raised by the discussion above is that the representation of government activities in microdata may not necessarily be an accurate picture of what is actually being attempted in each country. In all countries. the redistributive effects of the total tax/benefit system are over-estimated, but the extent to which this over-estimate affects outcomes differs between countries.

4.1.4 The distributional implications of public and private provision of welfare

The discussion above suggests that the standard approach to income distribution analysis may introduce errors in comparative analysis, unless account is taken of Government noncash benefits and the way in which all benefits are financed. In addition, there are further potential errors in the standard treatment of the benefits of Government social security systems. These problems arise because transfers and taxes and social security contributions can substitute for a wide range of private

arrangements for individual protection, and *vice versa*. As noted by Atkinson (1991), consideration of the effects of social insurance should take account of the possibility of the *equivalence of transactions* - 'Where for instance people are already saving for old age, the introduction of a compulsory government pension scheme on the same terms may simply displace the private savings' (p. 111).

This has different implications in different countries depending on the type of social security system operating. In general, these factors can result in inconsistencies in the definition of gross income and disposable income between countries. It can also be argued that the standard approach does not deal comprehensively with all the benefits of private provision of welfare, and as a result, international comparisons of living standards are distorted.

The issues involved can be looked at in several ways. It is useful to start with some definitions of the objectives of government social protection. Social security benefits can be seen either as performing the function of savings (e.g. for retirement), or insurance (for sickness or invalidity or to provide benefits for survivors). (This is similar to the argument recently put by Falkingham, Hills, and Lessof (1993) and colleagues that the welfare state can be considered as a form of 'savings bank'.) This can also be seen as an attempt to reduce economic uncertainty and insecurity (Holden and Smeeding, 1990). Another function of cash benefits is to redistribute income, with the objective of poverty alleviation being regarded as a minimal form of possible redistribution. Redistribution by the social security system can be inter-personal - from rich to poor, for example - and intra-personal - from times of high incomes for individuals to times when their incomes are reduced, as in retirement. Intra-personal redistribution is a means by which individuals save for their retirement or insure themselves against contingencies. As noted previously, it can also be a means of alleviating poverty if individuals would be poor at some stage in their life, if not for the benefits they had already contributed towards.

Different social security systems put differing degrees of emphasis on the two types of redistribution. In general, it can be expected that earnings-related systems maximise redistribution across individual life times. Flat rate or means-tested systems will put more emphasis on redistribution across income groups, leaving a greater responsibility to individuals to provide for themselves in retirement. If information were available on lifetime incomes, taxes and benefits, then it would be possible to separate out the two types of redistribution. This has been done by Harding (1992) using a dynamic cohort microsimulation model applied to Australian data, and by Falkingham, Hills and Lessof (1993) using a similar model on UK data.

These studies find that much redistribution effected by the tax-transfer systems in these countries is intra-personal.. Harding (1992) estimates that in Australia around 45 per cent of the income taxes paid by males, on average, were returned to them as cash transfers, with the remaining 55 per cent going to inter-personal redistribution. Falkingham, Hills and Lessof (1993) estimate that around 62 per cent of the average gross lifetime benefits received were intra-personal, and the balance represented redistribution between individuals.

4.1.5 Savings and social security

This discussion reinforces the point that the social security systems of different countries can be considered as a type of savings bank, which is drawn on, mainly in retirement. As a form of compulsory savings, social security structures the choices made by individuals about their other forms of savings and the extent to which they have to make additional provision. Depending upon the institutional environment in different countries - particularly the tax laws and benefit arrangements - individuals can choose between different avenues for savings to produce the portfolio of assets they will draw on in retirement.

Savings for retirement can take many forms. As discussed, these include public pensions as well as occupational and private pension schemes (either yielding annuities or lump sums, or some combination of the two), private financial investments of various forms, housing for owner-occupation, other housing and land, and other forms of real property, including consumer durables. Of course, contributions to public pensions are largely unavoidable (except for opting-out arrangemt ı as with SERPS in the United Kingdom). Many occupational super= ı schemes are also effec * bl gatory, so that individuals could be expected to structure their other forms savings around these two major systems of retirement provision.

Obviously, comparisons across countries should be both comprehensive and consistent in their treatment of different forms of savings. But this is not the case. The standard method does not normally include the benefits conferred by saving through the purchase of c:.: er-occupied housing, nor does it fully encompass the benefits arising from the acquisition of private wealth. In addition, it can be argued that a further inconsistency is introduced in the treatment of public and private pension rights and contributions.

4.1.6 The costs of private provision

The discussion above has argued that private sources of welfare have not been fully incorporated into most studies using the standard approach, just as most of these studies have not fully taken account of all government benefit programmes. But the distributional implications of taking account of more private resources also depends on how these income components are paid for. In a sense, this point is implicit in observations made by Baldwin (1990) in his analysis of *The Politics of Social Solidarity:*

> For a member of the middle class, average in both fortune and risk, social insurance of sufficient actuarial orthodoxy was not especially distinct from private efforts at risk redistribution. It offered no particular advantages beyond certain considerations of efficiency and administration, and threatened no fearsome disadvantages. For such a person, it mattered little whether public risk redistribution was limited to the poorest, leaving the self-sufficient to their own devices, or whether statutory intervention broadened in scope, with the bourgeoisie both the main source and primary recipient of reallocation. For the average middle classes the distinction was largely a matter of indifference: *whether they insured themselves or paid taxes for statutory provision was materially inconsequential.*
>
> (Baldwin, 1990, p.297; emphasis added).

What Baldwin identifies is a crucial factor, left out of many analyses of welfare state outcomes. In terms of the standard of living of a middle class household, it is 'materially inconsequential' whether they pay taxes to the government to secure their pensions in retirement or whether they contribute to an occupational or a private pension scheme. The benefits they receive must be paid for, either in the form of taxes or in private contributions. This may explain why tax revolts can occur in countries with apparently very low levels of taxation. Since the middle classes in these countries may have substantial private insurance or pension contributions, they will be sensitive to tax increases unless these increases provide offsetting reductions in private expenditure in order to maintain their real disposable incomes. Such an effect would be reinforced by ideological beliefs about the (in)efficiency of government provided services.

In the standard approach, these taxes are included in the calculation of disposable income, but the contributions made to occupational or private pension schemes are not. Consider Table 4.2 which compares three contrasting approaches to the organisation of health insurance. The term taxation is used in this context to refer to the source of finance for transfers or other programmes that benefit some other

individual in society. The term contributions is used to refer to the source of finance for programmes that benefit oneself.

In situation A, health insurance contributions are paid by the employer, who is assumed to reduce wages by the corresponding amount. In B, contributions are paid by the employee in the form of obligatory social insurance, while in C the contributions are paid privately out of after-tax income. These three situations can correspond to arrt -gc - in different countries or at different times in the same country. Initially, it eau be argued that these three situations are exactly equivalent in terms of the employer wages paid and the final command over resources enjoyed by individuals A, B, and C, but in the standard approach these three situations are treated as if they are different. In the standard approach, employer contributions are ignored, as are private contributions.

Table 4.2: Treatment of **income** components **under alternative welfare systems**

	A	**B**	C
Employer wages	100	100	100
Employer contributions	5		
Gross earnings	95	100	100
Taxation	5	5	5
Employee contributions		5	
Disposable income	90	90	95
Private contributions			5
Command over resources	95	95	95
Balancing factor	+5	+5	+5

If the equivalence of these three situations is accepted, then the processes and outcomes can be put on the same basis in the following way. It is desirable that both gross income and disposable income are adjusted, so that comparisons of incomes before and after taxes can be made. The table suggests that instead of disposable income, the term `command over resources' is used. This is set at 95 units rather than 90, since the amount that is available for these individuals' personal consumption is determined by gross income minus transfers to other individuals. This means that employer contributions in situation A have to be treated as a component of both gross and disposable income. This is not an original suggestion, since all it means that employer fringe benefits should be included in the definition of income, a point made by Titmuss (1958). In situation B, the appropriate balance is introduced if the value of the public health system as an insurance premium is credited back to individuals. All this implies is that the imputed value of government benefits in kind be added to disposable income, a point already made in detail.

The appropriate final command over resources in situation C can apparently be achieved either by disregarding personal health insurance contributions, or by adding them in together with the imputed value of the health insurance purchased. This paper would argue that the second approach is correct. In this situation, this result will be consistent with the preferred approach to the imputation of income from owner-occupied housing, which takes account of both benefits received and costs incurred in paying for those benefits. In this particular example, the effect is immaterial, but in real countries the differences could be substantial. In other areas of social policy as well the two approaches could produce different effects. This reflects the fact that the example of health insurance refers to situations in which the costs (contributions in whatever form) and the benefits (insurance) are received at the same time, and assumed to be of equal value. In other cases, such as purchasing a pension, the costs and benefits accrue at different times, and therefore involve redistribution over the lifetime.

Table 4.2 has simplified a very complex situation. A major issue is the appropriate valuation of the benefits received under the three alternatives. Given the choice individuals may not necessarily choose to make health insurance contributions that were equal to the notional portion of their contributions. Lack of competition in

public health insurance may lead to higher contributions because of lower productivity in the public sector. On the other hand, a public system may benefit from significant economies of scale, and being in a monopoly may mean that costs can be contained more effectively. All of this implies that in real countries the level of contributions and benefits may differ, rather than being identical. This is not a problem when making comparisons across countries with different systems, since the two factors balance out in this case. There is a potential problem in countries such as the United States where all three approaches to health insurance co-exist. This is that the contributions required from employers with large numbers of employees may not be as great as average individual contributions made by people who are not part of employer schemes. A further question is how to treat individuals who do not take out private health insurance in situation C because they cannot afford to, as is common in the United States. It is difficult to evaluate this situation, since the true costs of the lack of health insurance depend upon contingencies. Rather than evaluate this situation in money terms, it may be appropriate to deal with it through a composite social indicator approach (Holden and Smeeding, 1990).

Table 4.2 used the example of health insurance, but the example could be of any programme which differs in the public/private mix between countries. Public and private housing have already been discussed, and it can be argued that including imputed income from owner-occupied housing and all imputed public housing benefits would provide a comprehensive and consistent result.

Further complex issues arise when considering private and occupational pension contributions and their relation to state pensions. The standard approach treats contributions to government pensions as a tax which finances the retirement pensions paid out in the same year. Since most state pension schemes are on a pay-as-you-go basis, this may initially appear to be appropriate. However, state pension schemes do not simply involve transfers at one point in time. The social security contributions that individuals make secure them a *right* to a pension (subject to minimum contribution requirements). and in earnings-related systems higher contributions entitle them to higher benefits. This will be the case even if the social security system is not fully funded, but is a pay-as-you-go system. Even if the benefits to be received are not actuarially related to the contributions, they are still an entitlement.

This can affect international comparisons of income distribution in several ways. Countries with earnings-related social security systems will tend to look more equal - and may have lower poverty rates - because a higher proportion of the savings that well-off individuals are making for their retirement are made in the form of taxes. Where flat-rate or means-tested benefits are provided, a lower proportion of these savings are made through taxes and a higher proportion through occupational and private pension contributions. In the standard approach, taxes are deducted from gross incomes to estimate disposable incomes, but pension contributions are not. As a consequence, higher paid workers in a country with a flat-rate or means-tested pension system will appear better off, because their taxes are not as high as in a country with an earnings-related system. But they still have to pay for their pensions out of this higher private income. Because they appear better off, average disposable incomes will be higher and a poverty line determined as a percentage of average or median disposable income will also be higher in relation to `true' disposable income. The standard approach to the analysis of income data must tend to make the middle and upper income classes appear to have lower disposable incomes in countries where pensions are more public than private. This is an artefact of the method of measurement. rather than a real difference.

This is just another way of reinforcing the argument that the middle classes in large welfare states may support high taxes and welfare spending, because they also benefit from that spending. In the standard analysis, however, their rights to benefits are not taken into account. From the perspective of comparing the living

standards of the retired with those of the working population, these arguments suggest the relative position of the retired will partly depend on the differing extent to which those in work in different countries must make private and occupational pension contributions. The calculation of pension replacement rates should also take account of the pension contributions of those in work.

e potential biases introduced by these factors can be addressed ' - a number of s note' the *HBAI* statistics in f - subtract tional pension contributions from disposable income, on the basis *that* these contributions do not enhance current living standards (a:_': because of the wording of the income questions in the Family Expenditure Survey). The arguments put above imply that contributions to public pension schemes and those to private and occupational schemes should be treated as equivalent in their impact on disposable incomes. The problem with simply subtracting private and occupational pension contributions is that the benefits of this form of saving are not taken into account. Alternatively, one can approach this issue in a way that is analogous to the imputation of income from owner-occupied housing wealth. That is, the imputed value of public and private pension rights can be estimated, net of contributions. It can be noted that if private and occupational pension contributions are considered as equivalent to a tax or to social security contributions, then their incidence is likely to be progressive, since coverage and payments increase with income.

To date, no international comparative analysis of income distribution appears to have incorporated imputed pension rights. There are a number of studies, however, that have argued for the inclusion of this form of wealth in distributional analysis (Feldstein, 1974; Wolff, 1985). In the UK, Stewart (1991) has estimated the level and distribution of total personal wealth, defined to include occupational and state pension rights as well as marketable wealth. The total value of occupational pension rights in 1988 are estimated as £440 billion, with the estimated value of basic pension rights in 1989 being *£468.9* billion, and SERPS rights as £104.3 billion. Total marketable wealth was valued at £1,588.8 billion. Thus, occupational and state pension rights are estimated to account for around 40 per cent of total personal wealth (Stewart, 1991, p.104). Wolff (1985) provides estimates of the effects of including pension and social security wealth on the position of the elderly and non-elderly poor in the United States. He estimates that the addition of (occupational and private) pension wealth reduces the ratio of mean wealth of the poor to the non-poor from 0.28 to 0.20, but the addition of social security wealth has the opposite effect, increasing the ratio of average wealth from 0.20 to 0.36 (1985, pp. 24-26).

In summary, different social security systems may produce very different distributions of public and private pension rights. The standard approach to income distribution analysis incorporates contributions to public pensions made in the form of social security contributions or personal income taxes, but effectively ignores the benefits flowing from these contributions in the form of rights to future income flows. The incomplete treatment of this part of Government redistributive activity may introduce errors in comparisons of income distribution across countries, including estimates of poverty rates.

4.1.7 The public/private mix and inequality

Despite all these arguments, it should be emphasised that a completely private system of provision for retirement or health insurance would be substantially more unequal than a completely public system of provision. Publicly provided health care, for example, means that contributions do not reflect risk and that benefits are potentially received irrespective of contributions. This solves the problems associated with those without health insurance cover. Similarly, state-provided retirement pensions can guarantee minimum benefits (although perhaps through means-tested assistance), and it is likely that maximum benefits will be lower under state provision than under private arrangements. It is true that private pensions can incorporate some indirect redistributive elements, but mainly as a consequence

of government regulation, e.g. maximum beiffit levels for the purposes of tax concessions. In addition, private provision i ly allow for extra benefits to upper income groups that would not occur under - purely public system. For example. private health insurance may give individuals the doctor or treatment of their choice, and they may be able to jump queues required for public provision. The treatment they receive may be better, in the sense that they can stay in hospital longer, or have access to more expensiv., c 3lc ey hu s. These 'rr be i need to be offset to i~zdi 'duals may have to make. The sa u 2 is true . apa ;i n sysef ns, where in general higher pe sic higher col- Privileges that have to be paid for are not privileges. i ere extra r If received by high income groups, it be in terms of more generous contributions to pensions or health : 'surance (occupational welfare), or tax concessions structured to produce gins that exceed any social securl,y foregone (fiscal welfare). These sources of inequality can be accounted for b, including occupational fringe benefits in the comprehensive definition of resources, and by modelling tax expenditures.

It can be argued that high levels of average social security benefits associated with earnings-related benefits and the social insurance approach offer the opportunity for greater redistribution to the poor, because the higher level of taxation gives policy makers the opportunity to provide higher levels of minimum benefits. This may be the case, although ultimately the extent to which this occurs will be dependent on the particular structure of the social security system in each country. Whether this redistributive potential is achieved in practice is an empirical question. In addition, as argued earlier, this mechanism has several implausible elements. At a practical level, therefore, there are many reasons for thinking that countries with higher levels of state involvement in social welfare will produce more equal distributional outcomes than countries with mixed or substantially private systems. The point of the example given above, however, is that even if we are able to hypothesise alternative systems that produce identical distributional outcomes, then the standard approach will treat those outcomes as if they were different, and will show that public provision is more equalising. This bias can be partly overcome by broadening the framework used to assess outcomes.

4.2 The value of Government noneash benefits

4.2.1 The scope of noncash benefits

Noncash benefits include a wide range of government and non-government activities that contribute to individuals' command over resources and their living standards. Potentially, these resources can be self-produced, as in the case of imputed income from domestic labour and child care; they could be purchased (the flow of services from ownership of consumer durables); or they could be provided by government through health, education, and housing programmes; they could be provided by employers; or they could be market-produced, as in the case of imputed rent from owner-occupied housing.

Noncash benefits in their various forms may make a significant contribution to the living standards of all population groups in developed societies. The case for taking account of these benefits is compelling, particularly when making comparisons across countries where the composition of the package of resources of households may differ substantially. Ideally, the full range of noncash benefits should be included in any analysis, but there are very significant problems of data and evaluation affecting the practicality of such a project. For example, domestic labour in the form of child care and other forms of care is quantitatively very important but difficult to value.

As shown in earlier discussions, the range of noncash benefits that could potentially be estimated is much wider than the resources actually allocated here. In summary, we have included spending on the two major government noncash

programmes - health and education. In the United States, we have also included employer-subsidised health care. This is because it is an extremely important benefit in the United States, with the coverage provided by employers being virtually equivalent in overall scope to that provided by Medicare and Medicaid. If these employer-provided benefits had not been included, then the resultant estimates of the impact of health spending would have been seriously misleading, since households covered by employers would be treated as if they were paying for this form of insurance themselves. Employer-provi [1] [7]- - have not been estimated for any other country, since even where they are significant, they do not approach the size of these benefits in the United States. The a ialysis also includes the value of imputed income from owner-occupied housing, as well as noncash housing subsidies in various countries.

A range of *nearcash* benefits are included in the LIS datasets, and have already been taken into account in the analysis of disposable incomes. These programmes include food stamps in the United States and housing benefits in the United Kingdom and Germany. No attempt has been made to estimate the value of government subsidies in the form of tax expenditures, because tax payments are observed. It would be interesting to model the impact of tax expenditures, but all this would do is clarify their impact, since they are already implicit in the after-tax income measure'". Such a modelling exercise would be very complicated, however.

The analysis also does not take account of other important social programmes that benefit households, for example, subsidised child care services and subsidised transportation services. This decision follows the approach of Smeeding, Saunders *et al.* (1992), who justified this on the basis that the scope of these programmes was very much less than that of health and education, and their impact on the distribution of resources and living standards would be correspondingly smaller. In many countries, the scope of spending on child care has increased since the beginning of the 1980s, the time to which the analysis of Smeeding, Saunders *at al.* (1992) refers. It should also be noted that spending on university education is not included in the analysis. This reflects the fact that the LIS data do not contain sufficient information to be able to identify university students, so that this spending cannot be allocated.

By way of background, Table 4.3 shows details of the level of cash and noncash benefits in the countries in this study, together with trends between 1960 and the mid-1980s, when the data to be used were collected. The level of spending on noncash benefits increased significantly in all these countries, with the increase being least in the United Kingdom and highest in the Netherlands. The level of spending on noncash benefits - here defined as health and education - was lowest in the United Kingdom and the United States, and highest in the Netherlands and Sweden. The level of spending on noncash benefits is very similar in Germany, Australia and Canada, at around 12 per cent of Gross Domestic Product.

It can be seen that the level of spending on cash benefits is more variable, ranging from just over six per cent of GDP in Australia in the mid 1980s to 12 per cent in Sweden, just over 13 per cent in Germany, and nearly 14 per cent in the Netherlands. These differences in levels of transfer spending are related to differences in the age structure of the population and the level of unemployment in each country at different times.

[14] The exception to this is mortgage interest tax relief in the UK, as discussed previously.

Table 4.3: Estimates of cash and noncash social expenditures as a percentage of Gross Domestic Product, 1960 to 1985

	Cash benefits				Noncash benefits				**Noncash as per cent of total**			
Country	**1960**	1975	1981	1985	1960	1975	1981	**1985**	**1960**	1975	1981	1985
Unicd Kingdom	4.3	7.0	8.8	8.5	7.1	11.8	11.2	10.0	62	63	56	54
t= r:.,.nv	9.9	14.1	13.9	13.3	5.5	12.0	11.7	12.5	36	47	48	48
I^s ' Ids	5.4	11.4	14.0	13.8	5.8	13.5	13.8	16.9	52	54	50	55
Aus.~.1ia	3.5	5.7	6.4	6.2	5.2	11.7	10.5	12.2	60	67	62	66
Canada	4.3	6.6	*6.9*	8.7	5.4	12.1	11.8	12.3	56	*65*	63	59
Sweden	4.6	8.4	12.3	11.9	8.0	12.9	15.5	14.4	63	61	56	55
United States	4.8	8.1	7.9	7.6	4.9	10.0	9.7	10.6	51	55	55	58

Notes: Cash benefits are the sum of spending on pensions and payments for the unemployed; noncash benefits include spending on health and education.

Source: OECD. 1988b.

The final panel of the table shows the importance of including noncash benefits in any analysis of the impact of government programmes on the living standards of different population groups. In all countries apart from Germany, the level of spending on noncash benefits exceeds spending on cash transfers. In the United Kingdom, the Netherlands and Sweden, about 55 per cent of total social spending is through noncash programmes, while in Canada and the United States, the proportion approaches 60 per cent. Nearly two-thirds of social spending in Australia is through health and education programmes. These ratios suggest, for example, that the impact of including noncash benefits is likely to be relatively greatest in Australia and least in Germany. The figures also show divergent trends in the relative importance of noncash spending in these countries over the period since 1960, with noncash spending falling as a proportion of total social spending in the United Kingdom and Sweden, being rather variable in the Netherlands and Canada, and increasing its share in Germany, Australia and the United States.

4.2.2 Previous research

Researchers associated with the Luxembourg Income Study have spent many years developing imputations of the value of benefits in kind and imputed income from owner-occupied housing to be applied to the LIS data (Smeeding, Saunders *et al.,* 1992). The results of these imputations suggest that use of this broader measure of resources may well change conclusions about the relative economic status of older people in the UK and other countries.

The study by Smeeding, Saunders *et al.* (1992) was restricted to the United Kingdom, West Germany, the Netherlands, Sweden, Australia, Canada and the United States around 1980. The value of health and education spending was imputed for all seven countries, and the imputed value of owner-occupied housing was added except in the UK and Australia, where the unit record tapes provided to LIS did not contain the necessary information.

Table 4.4 presents some general results of Smeeding, Saunders *et al.* (1992), showing the shares of equivalent income held by the lowest and the highest income quintiles in each country, as analysis moves from disposable cash income to the two measures of adjusted final income. In all countries, the inclusion of health and education spending increases the share of the bottom quintile and reduces the share of the highest income quintile. The impact of this adjustment is particularly strong in Germany, where the share of the lowest quintile increases from 7 to 10 per cent and the share of the highest quintile falls from 38 to 33 per cent. The inclusion of imputed income from owner-occupied housing has different effects in different countries. In Germany, it appears that imputed income from housing favours higher income groups, as its inclusion shifts the income shares back to levels close to their share of disposable income. The distribution in the Netherlands is equalised more by this factor than is the case in other countries, while the effect of housing in Canada is relatively small.

Table 4.4: Income shares by income concept in seven nations based on adjusted disposable income and final income, around 1980

Country	Disposable cash income	Adjusted final income I (health and education)	Adjusted final income 2 (health, education, housing)
United K:			
Quint_e 1	*5.9*	*6.2*	
Quint": *5*	*39.5*	*38.2*	
Q i.fr, l	*7.0*	*10.2*	*7.2*
Quintile *5*	38.1	*32.6*	*37.6*
Ian: is			
Quitile 1	*6.9*	*7.6*	*9.3*
Qufile *5*	*38.2*	*37.2*	34.7
S , _.			
Q..i.,"e I	*8.3*	*8.6*	*8.9*
Quiile *5*	*36.7*	*36.8*	*36.3*
Australia			
Quintile I	*5.4*	*5.7*	
Quintile *5*	40.0	*39.7*	
Canada			
Quintile 1	*5.4*	6.1	*6.2*
Quintile *5*	*39.4*	38.1	*37.6*
United States			
Quintile 1	4.7	*5,3*	*5.9*
Quintile *5*	40.7	*40.0*	*39.2*

Source: Smeeding. Saunders *et al.*. 1992.

Table 4.5 shows the incomes of older people in each country as one moves from one income measure to another, These are expressed as a percentage of average incomes for the population as a whole in each country. It can be seen that on the first two income measures the average relative incomes of the older people in the UK are the lowest of those in any of the countries included. The addition of benefits in kind slightly improves this relativity in most countries. The exceptions are West Germany, where the average incomes of older people fall somewhat, and Canada where the relative circumstances of older people improve more significantly, and Sweden, where the average relative incomes of the elderly rise dramatically. The addition of imputed income from owner-occupied housing is more significant in Canada and the United States than in the other countries.

Table 4.5: **Incomes of the** elderly **as percentage of average incomes, singles and couples by income concept in seven nations based on adjusted disposable income and final income**

	Disposable cash income		Adjusted final income 1 (health and education)		Adjusted final income 2 **(health, education, housing)**	
Country	Single	Couple	Single	**Couple**	Single	**Couple**
United Kingdom	31	*58*	*33*	*57*	–	–
West Germany	*50*	*87*	48	*86*	*49*	*86*
Netherlands	*56*	*82*	*56*	84	*55*	*83*
Sweden	*56*	100	*69*	111	*70*	110
Australia	*37*	*66*	*39*	*68*	–	
Canada	42	*80*	*47*	84	*49*	*89*
United States	41	*87*	43	*86*	47	*89*

Source: Smeeding, Saunders *et al.*, 1992.

Finally, Table 4.6 shows the effects of these imputations on measured poverty rates, where poverty is defined as income less than half the national median equivalent cash disposable income. This means that the poverty line is not changed to reflect the inclusion of the broader income concepts. It can be seen that on the basis of disposable cash income the UK is estimated to have the highest poverty rates among the elderly, and the fourth highest overall. When health and education

benefits are added, poverty drops substantially in all countries, but particularly in the UK. and particularly for elderly couples, For the population as a whole, the UK moves to having the equal lowest poverty rate with Sweden.

Table 4.6: Family poverty* rates (%) **in** seven **nations** based **on adjusted disposable income and final** income by family type**

1. Adjusted disposable cash income

Country	Elderly Single	Elderly Couple	**Total Population**	**Poverty** Risk * Elderly Single	**Elderly Couple**
United Kingdom	50.3	23.5	13.5	3.7	1.7
West Germany	18.1	8.8	7.5	2.4	1.2
Netherlands	4.9	1.4	6.6	0.7	0.2
Sweden	1.1	0.3	5.6	0.2	0.05
Australia	46.1	7.7	15.1	3.1	0.5
Canada	41.8	8.9	15.1	2.8	0.6
United States	45.2	17.0	18.5	2.4	0.9

2. Adjusted Ina/ income (health and education.)

				Poverty Risk ***	
United Kingdom	18.6	1.1	4.3	4.3	0.3
West Germany	14.6	4.4	5.4	2.7	0.8
Netherlands	4.9	1.0	4.7	1.0	0.2
Sweden	0.0	0.3	4.3	0.0	0.06
Australia	8.2	4.9	7.4	1.1	0.7
Canada	9.4	1.3	7.2	1.3	0.2
United States	33.9	8.9	12.1	2.8	0.7

Notes: * Poverty rates are calculated as the percentage of families with adjusted incomes less than half the national median adjusted cash disposable income. Adjusted using the budget studies programme equivalence scale.

** The elderly are families with the head or spouse aged over 65.

*** The poverty risk is the ratio of the poverty rate for the elderly to that of the total population.

Source: Smeeding, Saunders *et al.,* 1992.

These results are subject to a number of reservations, particularly in regard to the use of a poverty standard that does not change as the income concept is altered. In our own analysis that follows of the data for the middle of the 1980s, we adopt an alternative approach, in which the standard of low income (40, 50 or 60 per cent of average income) is adapted to the new measure of resources (40, 50 or 60 per cent of average income plus noncash benefits).

4.3 Imputed income from housing and liquid wealth

4.3.1 Owner-occupation and income

The housing arrangements and costs of different income groups can have a significant impact on their standard of living. Governments may provide a wide range of assistance directed towards housing costs. Where that is provided in the form of cash benefits - such as housing benefit in the United Kingdom - it is included in the measure of disposable cash income. Assistance can also be provided in the form of indirect subsidies to publicly provided rental accommodation. In the LIS data tapes, only the results for the United Kingdom include information distinguishing between public and private renters. These results are included in Appendix Two, but the lack of information on the scope of public rental accommodation in other countries means that no comparisons are possible.

Housing also contributes to well-being through owner-occupation. That is, persons who own or are purchasing a house benefit from the flow of services arising from the possession of that asset. This can be viewed as the imputed rent they could otherwise receive, or the rent they would be paying if they rented this housing.

Imputed rent is calculated net of the costs involved in earning that income - mortgage interest payments, and maintenance and repair costs. Inclusion of net imputed rent in the income measure will tend to improve the position of owner-occupiers compared to renters. In addition. outright owners will probably have higher net imputed incomes than purchasers, because they are not paying mortgage interest, and interest repayments will also be lower for those who are long-established rather than recent purchasers. Offsetting these factors to some extent is that older houses wil[1] st -e luire greater expo " maintenance and repairs.

This section describes the pattern of owner-occupation in the countries included in the study. No information is presented on the distribution of rented accommodation. As noted above, this is because it is not possible to distinguish between public and private renting, and other tenure forms (mainly rent free) are everywhere insignificant. As a consequence, the proportion of the population living in rented accommodation is generally the simple complement of the proportions shown below. In addition, it is only possible to distinguish between outright ownership and purchasing for the United Kingdom, Luxembourg, Australia and Canada. No information is included on tenure in the French dataset.

Table 4.7: Level of **owner-occupation** by equivalent **income quintile, total population, selected countries,** mid 1980s

	Quintile group					
	Lowest	**Second**	**Third**	**Fourth**	Highest	**Total**
United Kingdom	52.6	45.7	64.6	78.3	87.5	65.7
France						
Germany	39.5	46.9	49.4	48.9	56.2	48.2
Italy	58.5	55.8	62.4	64.5	66.5	61.6
Luxembourg	57.6	61.0	71.4	78.1	73.0	68.3
Netherlands	40.4	45.4	53.4	57.3	63.1	51.9
Australia	62.9	72.4	80.4	75.7	78.5	74.0
Canada	55.0	66.9	72.7	78.1	81.2	70.8
Sweden	40.0	47.7	55.0	61.5	69.9	54.8
United States	43.9	63.4	73.0	78.1	82.1	68.1

Note: This is the proportion of persons in each quintile living in accommodation which is either owned or being purchased by someone living in the same household.

Source: Estimated from LIS data files.

Table 4.7 shows the level of owner-occupation by income quintile for the total population in each country. Around two-thirds of all persons live in owner or purchaser households in the United Kingdom; this figure is somewhat lower than the level in Luxembourg and the United States and slightly above the level in Italy. Owner-occupation is highest in Australia, where nearly three-quarters of all individuals are in this tenure, followed by Canada. The level is lowest in the Netherlands, Germany and Sweden, where it is around 50 per cent.

Broadly speaking, levels of owner-occupation tend to increase with income, except in the UK and Italy where it falls and then rises. The income ownership profile appears flattest in Italy and Germany. The increase in ownership with income level is most marked in the United States, and then the United Kingdom (from the second quintile), followed by Sweden. Australia has the highest level of owner-occupation in the lowest three quintiles of the distribution. Germany and Sweden generally have the lowest level of owner-occupation in the lowest income group, although the United Kingdom has a relatively low level in the second quintile.

Table 4.8 shows the relationship between owner-occupation and age. It should be noted that these figures show the proportion of persons in each group who are living in housing which is either owned or purchased by someone living in the same household. Thus, the high proportion of persons under 25 years of age in owner-occupied housing reflects the fact that many of these people are dependent children, living with their parents who are purchasers. The differences in patterns

between countries reflect varying trends within countries. For example, in the United Kingdom the level of owner-occupation is highest among those aged 35 to 44 years, probably as this group have taken advantage of government po'leies to encourage home ownership in the last decade or so. In contrast, in con- *es 1-here home ownership has been encouraged for longer, levels of owner-occu;: peak later in the life cycle. In Germany, Italy, Luxembourg, Australia and I e United States, the highest level of ownership is among those aged 55 to 64 years.

Among persons aged 65 to 74, the level of owner-occupation is highest in Australia, followed by the United States and then Luxembourg. The level of owning/purchasing is just under 54 per cent in the United Kingdom, which is just below that in Sweden, but is about ten percentage points higher than in Germany, where owner-occupation is lowest. A similar pattern applies for those aged 75 years and over - the level is highest in Australia and the United States. The level of owner-occupation for this group is under 50 per cent in the United Kingdom and Germany, and only around a quarter in the Netherlands and Sweden.

Table 4.8: Level **of owner-occupation** by **age group,** selected countries, **mid** I980s

	Percentage group							
	< 25	25-34	35-44	45-54	55-64	65-74	75+	Total pop'n
United Kingdom	64.5	69.1	76.4	72.3	62.6	53.7	49.6	65.7
France								
Germany	49.3	30.8	48.5	57.6	58.1	43.4	46.7	48.2
Italy	59.1	50.0	59.8	67.3	71.2	70.0	63.1	61.6
Luxembourg	65.4	55.3	66.9	77.3	82.1	75.7	69.9	68.3
Netherlands	55.4	46.6	65.2	56.5	47.1	32.3	25.9	51.9
Australia	70.5	63.6	78.5	82.6	83.0	81.6	77.6	74.0
Canada	69.6	57.6	75.4	81.8	80.4	70.3	67.3	70.8
Sweden	52.9	45.0	65.9	70.6	63.9	56.2	22.8	54.8
United States	61.9	54.7	72.3	81.9	84.9	79.9	76.0	68.1

Note: This is the proportion of persons in each age group living in accommodation which is either owned or being purchased by someone living in the same household.

Source: Estimated from LIS data files.

Table 4.9 shows the level of owner-occupation by income quintile among the older population, separately for single older people and older couples. For single older people as a whole, ownership is highest in Australia. Luxembourg, the United States, and Italy. The overall level is fairly low in the United Kingdom, with Germany being lower and the Netherlands and Sweden being very low. Among the lowest quintile of single older people, however, the level of ownership is quite high, being just under that in Luxembourg and slightly more than in Italy or Australia. In the UK, home ownership falls significantly in the second and third quintiles of the single elderly, and then rises.

Falls in the level of ownership from the first to the second quintile of single older persons are also found in Germany, Italy, Luxembourg, the Netherlands and Sweden, and for older couples this pattern is also found in the United Kingdom, Germany, Italy, Luxembourg, the Netherlands, Sweden (and Canada to a small extent). To some extent, this pattern can be characterised as one of `asset rich, income poor'. In the UK context, one possible explanation for this pattern is non take-up of Supplementary Benefit among some members of this group, or exclusion from Supplementary Benefit because some in this group exceed the capital limits. This possibility is discussed further in considering liquid wealth.

Older couples are generally more likely to be owner-occupiers than are single older people. This discrepancy is greatest in Sweden, where couples are nearly three times more likely to be owners. It is least in Italy and Luxembourg (about 18 per cent higher) and in Australia (25 per cent). In the United Kingdom and the United States, couples are about one-third more likely to be owner-occupiers. Within some

income groups such as the lowest quintile in the United Kingdom, couples are less likely to be owner-occupiers.

For all older people as a group, owner-occupation is highest in Australia, the United States and Luxembourg and lowest in the Netherlands, Sweden, Germany, and then the United Kingdom. Owner-occupation, however, is quite high in the lowest quintile in the United Kingdom, being exceeded only by Italy, Australia and Luxembourg. Owner-occupation falls in the second and third quintile groups in the UK, and in the middle income group is the lowest of all these countries. It rises again in the highest income group, so that owner-occupation in this group in the United Kingdom is higher than in Germany, Italy, the Netherlands or Sweden.

As noted above, these figures have referred both to persons who are outright owners or who are purchasing their house. Clearly outright owners will tend to have a more valuable asset than will purchasers, and to the extent that the likelihood of completion of purchase rises with age, the older population will be better placed than the younger age groups. The data in LIS distinguish between purchasers and owners, only in the case of the United Kingdom, Luxembourg, Australia and Canada. Table 4.10 compares the level of outright home ownership in these countries. For the total population, the level of ownership is similar in the United Kingdom and in Luxembourg, at around 17 per cent, but it is around 30 per cent in Canada and 35 per cent in Australia.

Table 4.9: **Level of owner-occupation by equivalent income quintile, older people, selected countries, mid 1980s**

	Quintile group					
	Lowest	Second	**Third**	Fourth	**Highest**	**Total**
1. Single older people						
United Kingdom	65.6	34.7	19.1	33.5	69.6	44.5
Germany	39.2	32.9	32.2	30.0	48.0	36.5
Italy	64.2	55.9	57.5	62.0	68.7	61.7
Luxembourg	68.6	58.0	70.4	73.1	76.3	69.3
Netherlands	56.7	11.2	15.4	19.6	39.3	25.6
Australia	63.9	69.3	65.5	69.5	81.7	70.0
Canada	44.8	45.8	49.1	66.6	74.1	56.1
Sweden	24.8	17.0	15.7	17.6	30.1	20.9
United States	53.5	62.1	72.0	72.4	75.7	67.1
2. Older couples						
United Kingdom	65.2	30.4	44.9	68.7	86.9	59.1
Germany	55.4	46.6	53.1	53.8	65.9	54.9
Italy	71.4	64.3	73.6	77.5	77.2	72.8
Luxembourg	*83.9*	*69.5*	65.7	94.8	96.3	81.8
Netherlands	43.6	23.9	19.1	41.0	51.0	36.0
Australia	82.8	87.3	88.4	89.3	88.3	87.2
Canada	75.3	73.0	73.2	86.4	87.0	79.0
Sweden	62.2	54.0	58.4	68.5	67.5	62.0
United States	81.7	88.4	90.4	89.8	95.4	89.1
3. All older people						
United Kingdom	65.1	34.6	31.0	51.8	79.8	52.4
Germany	46.3	37.6	46.0	41.9	56.7	45.7
Italy	67.2	61.7	67.9	70.8	73.2	68.2
Luxembourg	79.1	62.6	79.7	87.7	92.8	78.3
Netherlands	39.4	24.0	16.1	32.0	45.4	31.5
Australia	73.3	78.7	80.5	82.4	85.5	80.1
Canada	59.8	60.4	65.6	77.9	82.6	69.3
Sweden	36.9	28.1	42.7	51.8	55.8	43.0
United States	63.7	74.9	83.2	82.0	89.7	78.7

Note: This is the proportion of persons in each quintile living in accommodation which is either owned or being purchased by someone living in the same household.

Source: Estimated from LIS data files.

The level of outright home ownership among the older population is by far the highest in Australia at 71 per cent, followed by Canada at 57 per cent, the United

Kingdom at 47 per cent, and Luxembourg at 40 per cent. The level of outright ownership among the older population falls and then rises with income in the United Kingdom, and generally rises with income in the other countries. This rise with income level is more pronounced in Luxembourg and Canada than in Australia.

***Table** 4.10:* **eve! of outright ownership by equivalent income quintile, total population, selected countries, mid** 1980s

	Outright ownership (%) by quintile group					
	Lowest	**Second**	Third	Fourth	Highest	**Total**
United Kingdom						
Total Population	22.4	15.4	15.9	16.7	18.3	17.7
All older	60.7	33.1	27.5	44.6	66.7	46.5
Lu 7o						
Tole I Population	17.5	14.5	17.4	17.5	18.3	17.1
All older	28.8	31.3	42.0	46.0	45.1	39.7
Australia						
Total Population	39.3	37.3	31.5	32.9	36.0	35.4
All older	66.3	69.5	75.5	72.3	73.3	71.4
Canada						
Total Population	27.4	32.2	27.9	30.4	35.6	30.7
All Older	49.4	53.4	56.1	60.9	65.7	57.1

Source: Estimated from LIS data files.

4.3.2 Liquid wealth

The previous section of this report discussed the relative importance of different sources of household income. One income component differs in some respects from other sources of income, this being income from savings, investments and property. Investment and property income differs from other income in that it represents the benefits of owning wealth that is more liquid than other forms of income-producing assets. Investments can be accessed more easily in times of need than can housing wealth, for example, and far more easily than occupational or state pension rights. In addition, wealth in the form of investments and property can be passed on to one's heirs, either a spouse or children, as can housing wealth. Occupational and state pension wealth can only be passed on in an imperfect manner, usually not to adult children, and surviving spouses usually receive less than couples.

On the other hand, ownership of liquid wealth is not an unmixed blessing. Rates of return may fluctuate substantially over time and there is much greater insecurity in income from this source than there is with state or occupational pensions. Nevertheless, on balance it is reasonable to argue that ownership of liquid wealth represents a real advantage. Indeed, this is recognised in benefit systems, such as supplementary benefit or income support, by the use of capital tests to exclude those with savings. Put simply, if we compare two people - one with an income of £5,000 from an occupational pension, and the other with £100,000 in investments and an income of £5,000 from that savings, then it would be generally agreed that the second person was substantially better-off than the first. This additional command over resources exists even if the capital is never diminished, but is passed on after death.

Crystal and Shea (1990) argue that the appropriate method of dealing with assets is to treat them as an annuity that pays a constant amount over the remaining lifetime, after deducting actual property income to avoid double counting. The LIS data, however, do not include information on the value of liquid wealth held by households, but only on the level of property income. Smeeding, Torrey and Rainwater (1993) estimate the approximate value of liquid wealth by assuming an arbitrary five per cent rate of return in each country. This approach has been followed here, and the results are shown in Table 4.11.

Table 4.11 shows average estimated liquid wealth expressed as a proportion of average disposable income for each quintile of all older people in each country. ¯ie,se are the ratios of equivalent property income (multiplied by 20) to equivalent)o^{s}able income. That is, for example, the lowest quintile of older people in the U Kingdom are estimated to have liquid wealth equal to 96 per cent of their annual disposable income; on average, the population of older people in the United h $^{'q}$uid asse is equal to 274 per $_{ce}$ t of their ii,lnu; i income. It can be $_{i-}$ ^{si}deria $_{''-ttt}$ is $_{tt}$ $_{ci}$ ^{f} $_{tan-}$ in ihese :Issas could be cash', in to double theit carrcnt animal income 'ding the interest they could earn over this period and any interactions with the taxation system and any income-related benefits).

Table 4.11: Liquid wealth of **all** older people **as** a **proportion of** equivalent **disposable** income, selected countries, **mid** 1980s

	Quintile **group**					
Country	Lowest	Second	**Third**	**Fourth**	Highest	**Total**
United Kingdom	0.96	1.07	1.15	2.06	5.16	2.74
France	*	1.09	1.38	1.93	5.39	2.89
Germany	0.56	0.73	0.52	1.01	3.85	1.90
Italy	0.25	0.43	0.63	0.75	1.88	1.05
Luxembourg	0.26	0.33	0.72	0.80	1.38	0.86
Netherlands	0.02	0.15	0.37	0.56	1.40	0.70
Australia	2.17	1.09	2.86	5.02	9.05	5.45
Canada	1.32	1.54	2.72	3.37	6.93	4.10
Sweden	4.90	2.67	2.03	2.01	2.95	2.77
United States	0.83	1.76	3.03	4.05	8.41	5.25

Note: * Receives negative property income.
Source: Estimated from LIS data files.

Overall, the level of liquid assets estimated in this way is quite high in the United Kingdom, being roughly equivalent to that in France and Sweden overall. The highest level of liquid assets is in Australia, followed by the United States, where they are nearly twice as great as in the United Kingdom. The level of liquid assets appears particularly low in the Netherlands and Italy and Luxembourg, where it is only around one-quarter to one-third of the level in the United Kingdom (relatively speaking). The relative level of liquid assets in the lowest equivalent income quintile is extremely high in Sweden, followed at some distance by Australia. The apparent level of liquid assets in the lowest quintile is low in Italy and Luxembourg, where they are equal to about one-quarter of equivalent disposable income. In France, the lowest quintile have negative property income (due to business losses) and estimated liquid wealth is therefore not shown. In the Netherlands, the lowest quintile of older people have insignificant liquid wealth, although this may also reflect the impact of business losses.

It should be remembered that these are ratios of liquid wealth to disposable income; because the level of disposable income varies across countries, so will the impact of this wealth. This is partly controlled for in Table 4.12 by showing the distribution of liquid wealth for each quintile of older people, standardised by the average liquid wealth for all older people. For example, this means that the lowest quintile of older people in the UK have liquid wealth that is 20 per cent of the average value for the entire population of older people, while the highest quintile has wealth equal to 3.38 times the average. That is, the liquid wealth holdings of the highest quintile are nearly 17 times as valuable as those of the lowest quintile of older people. With a number of striking exceptions, there appears to be a broadly similar pattern of distribution of liquid wealth measured in this way. In the United Kingdom, Germany, Luxembourg, Australia and Canada, the lowest quintile of older people hold liquid wealth of around 15 to 25 per cent of the average; in the United Kingdom, France, Germany, Italy, the Netherlands, Australia, Canada and the United States, the highest quintile of older people hold liquid wealth between three and four times the average.

The exceptions to this pattern include Sweden, which has a very equal distribution of liquid wealth, with no income group falling below about two-thirds r the average, and the highest group having about one and two-thirds times the ; The other exception is the United States, where the wealth of the lowest qal about five per cent of the average.

Table 4.12: Distribution of liquid wealth of all older people by equivalent income quintile. selected **countries. mid 1980s**

	Quintile group					
	Lowest	Second	Third	Fourth	Highest	Total
United Kingdom	0.20	0.28	0.36	0.79	*3.38*	1.00
France	*	0.25	0.39	0.71	3.64	1.00
Germany	0.14	0.27	0.24	0.58	3.75	1.00
Italy	0.11	0.28	0.53	0.83	3.26	1.00
Luxembourg	0.15	0.28	0.76	1.06	2.75	1.00
Netherlands	0.01	0.16	0.44	0.87	3.52	1.00
Australia	0.21	0.14	0.41	0.93	3.31	1.00
Canada	0.17	0.26	0.56	0.90	3.12	1.00
Sweden	1.12	0.78	0.67	0.79	1.64	1.00
United States	0.05	0.19	0.48	0.90	3.38	1.00

Note: * Receives negative property income
Source: Estimated from LIS data files.

The effects of the inclusion of liquid wealth in the analysis of the living standards of older people also depend on the relative size of the wealth holdings of older people and of the rest of the population. This is shown in Table 4.13 which compares the ratios of the liquid wealth holdings of all older people to the average for the rest of the population. For example, this means that the lowest quintile of older people in the United Kingdom hold liquid wealth equal to 61 per cent of the average liquid wealth held by all non-older people, while older people on average have liquid wealth three times that of the rest of the population. These figures suggest that *relative* liquid wealth holdings of the older population are highest in the United States, followed by Canada and then France and the United Kingdom. Of course, these are relative to the size of the liquid wealth holdings of the non-older population. The final column of the table shows that the liquid wealth holdings of the non-older population are by far the highest in Australia. followed at some distance by the United States.

Table 4.13: Ratio of liquid wealth of all older people **to that of** non-older people, selected countries, **mid 1980s**

	Quintile group of older people						
	Lowest	Second	Third	Fourth	Highest	All older people	Years of liquid wealth for non-older people
United Kingdom	0.61	0.85	1.07	2.36	10.11	3.00	0.75
France	*	0.83	1.31	2.37	12.06	3.31	0.88
Germany	0.35	0.66	0.59	1.42	9.23	2.46	0.75
Italy	0.12	0.32	0.61	0.95	3.74	1.15	0.83
Luxembourg	0.28	0.51	1.37	1.90	4.96	1.80	0.44
Netherlands	0.04	0.44	1.21	2.37	9.58	2.72	0.01
Australia	0.51	0.33	0.99	2.26	8.00	2.42	1.61
Canada	0.72	1.12	2.39	3.87	13.38	4.29	0.83
Sweden	*3.32*	2.31	2.00	2.34	4.87	2.96	0.76
United States	0.25	0.91	2.27	4.27	16.09	4.76	1.07

Note: * Receives negative property income.
Source: Estimated from LIS data files.

In conclusion, it should be emphasised that these estimates of liquid wealth are the by-product of a standard assumption that measured property income in the surveys represents a constant five per cent rate of return on liquid assets held by all income

groups. In this sense, these results are therefore another, more complex way of describing the distribution and relative size of income from investments in different countries, as measured in these surveys. Three important problems may arise. One is that the effective rate of return on liquid wealth may differ between countries. A second problem is that rate of return may differ across income groups and population sub-groups. It should be noted, however, that if higher income households are able to achieve higher rates of return on assets, this implies that their liquid oldings are relatively less substantial. since liquid wealth is calculated as the *inverse* of the rate of return multiplied by investment income. The third problem is the well-known under-reporting of investment income in surveys.

These problems suggest that the results in this section should be regarded as highly tentative. Having said this, this issue is of sufficient importance to warrant detailed attention in this study. The living standards of older people in a comparative perspective are crucially influenced by differences in the ways in which savings for retirement are made in different countries.

Chapter 5 The I mpact of Noncash Benefits - New Estimates

5.1 Methodology

This chapter largely adopts the approach used by the earlier study using the Luxembourg Income Study datasets (Smeeding, Saunders *et al.,* 1992). *As* far as possible, their methodology has been replicated, although on the second wave of LIS data. But this analysis uses different definitions of the unit of observation (the person), as well as the unit of classification (the benefit unit), and different equivalence scales. It follows that even while we adopt the same approach to the valuation and measurement of noncash benefits, that our results cannot be directly compared to those of the earlier study.

The imputation procedures used in this analysis follow those adopted by Smeeding, Saunders *et al.* (1992). They are as follows:

- Account was taken of both benefits and costs, so that only net subsidies were imputed to households;

  The total value of noncash benefits is assumed to equal the level of expenditure by the government or employer. This implies that the recipient's value of noncash income may be overstated for households who may have chosen to spend the monetary value of noncash subsidies in other ways, had these been provided as cash transfers;

- All general or specific externalities are ignored, so that the household which directly receives the noncash benefit (e.g. education) is assumed to be the only household to benefit;

- Both operating and capital outlays are included in allocated spending on education and health care.

These assumptions are not uncontroversial, in particular the valuation of benefits at their cost to the government. In the case of health spending, we implicitly assume that such programmes provide a form of insurance. This means that we are not concerned about individuals' actual use of health services, but their access to potential coverage of their risks. It can also be argued that valuation at cost to the government is appropriate when considering the net impact of government spending and taxing. In particular, those taxes which are taken into account in determining disposable income should not be thought of as a pure burden on taxpayers. These taxes pay for services that many individuals actually receive over the same period as they are paying tax, and this reciprocity of taxes and benefits should be acknowledged in any analysis of living standards.

The precise approach adopted in each country differs according to the arrangements existing in each country and the nature of the data available. Appendix Five contains details of the specific approach adopted in the United Kingdom and other countries.

5.2 **Results**

A first impression of the effects of adding the value of noncash benefits to the LIS income data can be gained from Tables 5.1 and *5.2,* which show the relative value of the additional components of final income expressed as a percentage of *cash* disposable income for quintiles of the total population and quintiles of older people, respectively. The tables also show the mean value of these additional

income components in each country, plus the range of value of these benefits, where the range is calculated as the average (cash) value of each benefit received in the highest quintile divided by the average value of benefits received by the lowest quintile.

Table 5.1 shows that the overall average value of health benefits ranges from seven per cent of disposable income in _ ie USA to 13 per cent in Sweden, with the other countries falling between. The e of education benefits ranges from only four per cent in Germany to nearly - per cent in Sweden. Housing benefits range between eight per cent in the UK : d 13 per cent in Canada.

For the total population, the distribution of health benefits is equalising in all countries, since the range is less than the range for disposable cash income. Sweden has the highest level of health benefits and the most equalising profile. In most countries health benefits are very progressive, but in Germany the value of benefits received by the highest quintile is about the same as those received by the lowest quintile. In the USA the highest income group receive more valuable benefits than the lowest quintile, largely as a result of the distribution of employer-provided health benefits.

Table **5.1:** **Value of noncash** benefits **by** equivalent **income quintile, total population**

	Benefits **as** a **percentage of cash disposable income**						
	Lowest	Second	**Third**	**Fourth**	**Highest**	**Mean**	**Range**
United Kingdom							
Health	23.4	15.8	10.1	6.8	3.9	8.9	0.76
Education	29.2	14.3	10.4	6.4	2.9	8.7	0.45
Housing	5.0	8.5	8.5	8.4	7.6	7.9	6.86
Germany							
Health	20.3	14.2	11.4	8.9	5.8	10.2	1.01
Education	10.9	6.9	4.6	2.7	1.4	4.1	0.45
l-' musing	8.3	8.2	8.1	7.6	7.0	7.7	2.96
	26.7	24.3	15.4	10.3	5.9	13.2	0.84
Education	33.0	15.0	10.6	7.1	2.5	9.7	0.29
Housin g							
A ustralia							
Health	28.6	15.2	9.4	6.9	4.0	9.0	0.70
Education	23.0	12.7	10.3	5.7	1.9	7.3	0.41
Hot sing	25.3	12.5	7.1	6.0	7.1	8.9	1.41
HeI	21.5	15.5	9.3	6.6	4.4	8.7	0.88
Education	29.0	12.7	11.6	7.1	2.7	10.9	0.40
Housing	18.8	16.1	14.1	13.3	10.2	13.2	2.36
Sweden							
Health	42.9	20.8	9.9	8.4	5.8	13.4	0.41
Education	21.9	17.6	15.9	10.0	4.3	11.8	0.59
Housing							–
United States							
Health	21.3	8.2	5.9	5.4	5.9	7.0	1.79
Education	46.0	17.4	10.7	6.3	2.3	9.3	0.33
Housing	*22.3*	13.3	10.0	7.7	5.5	8.8	1.59

Source: Estimated from LIS data files.

The distribution of education benefits is remarkably similar in the UK, Germany, Australia and Canada. Education benefits are only slightly less progressive in Sweden and more progressive in the USA and the Netherlands

Housing benefits - where they can be estimated - show the most marked differences. Housing benefits are strongly equalising in Australia and the USA, less so in Canada, but very unequally distributed in the UK. For example, the average housing benefit raises the average cash disposable income of the highest quintile in

Australia by only 1.4 times the value of benefits received by the lowest quintile, but in the UK this ratio 6.9. Put another way, in each country the highest quintile receive housing benefits equal to about seven or eight per cent of their cash income, but for the lowest quintile, noncash housing benefits are only five per cent of income in the UK but 25 per cent in Australia (and nearly the same in the USA and Canada).

This result may appear surprising, but it reflects the fact that the age-tenure profiles vary across countries, so that in Australia, Canada and the USA the highest level of imputed income is received by older people, who tend to have lower average cash disposable incomes, particularly in Australia. More generally, home ownership is more equalising in these countries, precisely because it is more common. In this context, it should be remembered that the UK and Germany have very substantial programmes of cash housing benefits, which have already been taken into account in determining the distribution of disposable income.

Table 5.2: **Value of noncash benefits by equivalent income quintile, older population**

	Benefits as a percentage of cash disposable income						
	Lowest	**Second**	**Third**	**Fourth**	**Highest**	**Mean**	**Range**
United Kingdom							
Health	38.5	30.0	25.0	19.2	10.2	20.8	0.81
Education	2.2	0.4	0.4	0.5	0.2	0.5	nc
Housing	4.7	10.4	12.0	11.5	10.7	10.4	6.92
Germany							
Health	28.8	19.6	16.2	12.9	7.5	13.9	0.99
Education	0.4	0.4	0.3	0.2	0.1	0.2	nc
Housing	11.9	7.8	8.3	7.4	7.9	8.3	2.54
Netherlands							
Health	52.8	48.5	38.6	28.7	16.8	32.1	0.92
Education	0.7			0.1	0.0	0.1	nc
Housing					–		–
Australia							
Health	40.0	32.2	28.9	19.2	8.2	20.4	0.77
Education	2.8	0.4	0.4	1.0	0.6	0.7	nc
Housing	46.4	24.2	32.0	24.6	16.8	26.7	1.37
Canada							
Health	48.3	45.7	32.1	23.7	12.8	26.9	0.98
Education	4.0	0.6	0.7	1.2	0.2	1.0	nc
Housing	29.0	24.2	22.2	18.4	16.3	20.2	2.18
Sweden							
Health	93.8	70.0	44.4	30.5	18.2	43.7	0.47
Education	0.4	0.0		0.4	0.1	0.0	nc
Housing		–					–
United States							
Health	46.4	25.3	17.0	11.7	7.6	15.0	1.03
Education	6.9	1.8	1.3	0.6	0.1	1.1	nc
Housing	49.1	31.9	22.9	14.8	8.6	17.7	1.10

Source: Estimated from LIS data files.

Table 5.2 bears out the implications of these general results, although with important variations. Not unexpectedly, in all countries health benefits are far more important for the older population than the general population, varying between 14 per cent of cash income in Germany and 44 per cent in Sweden, and once again being least progressive in the USA and Germany. Education benefits are not substantial for older people, since it is families with children who overwhelmingly benefit from this programme. The value of housing benefits ranges from under ten per cent in Germany to 26 per cent in Australia, with the distributional profiles being similar to those for the general population.

Another way of presenting these results is shown in Table 5.3 which calculates the disposable cash income of older people and the total population as a percentage of

final income, using the two final income concepts. For example, the average cash disposable income of older people in the UK is 82 per cent of cash income plus noncash health and education benefits and 76 per cent of cash income plus health, education and housing benefits. Table 5.3 shows clearly that noncash benefits are a substantial proportion of income in all countries, but perhaps less so in Germany. The effects are strongest for the lowest quintile, however. For example, for the lowest quintile of older people in the USA cash disposable income is just under half the value of final income 2.

Table 5.3: **Cash income as percentage of final income, selected countries, mid-1980s**

Country and final income* measure	All older people	Lowest quintile of older people	Total population	Lowest quintile of population
United Kingdom				
1	82	71	85	82
2	76	69	80	76
Germany				
1	88	77	87	76
2	82	53	81	70
Netherlands				
1	76	65	81	63
2				
Australia				
1	83	70	86	66
2	68	53	80	57
Canada				
1	78	66	85	66
2	68	55	76	57
Sweden				
1	70	51	80	61
2				
USA				
1	86	64	85	60
2	75	49	79	53

Note: * Final Income 1 is cash disposable income plus noncash health and education benefits.
Final Income 2 is final income 1 plus noncash housing benefits.
Source: Estimated from LIS data files

Table 5.4: **Average income of older people as percentage of average income of total population, by income concept**

	Income Concept*		
		2	3
United Kingdom	84	87	88
Germany	98	97	97
Netherlands	102	110	
Australia	73	76	86
Canada	88	96	100
Sweden	84	97	
USA	97	97	103

Note: * Income Concept 1 is cash disposable income.
Income Concept 2 is cash disposable income plus health and education benefits.
Income Concept 3 is cash disposable income plus health and education benefits, plus housing.
Source: Estimated from LIS data files.

Table 5.4 shows the average income of older people as a percentage of the average income of the total population by income concept. Income concept 1 is cash disposable income, and the results are therefore as shown earlier in this report. The addition of noncash benefits improves the relative position of older people in all countries except Germany, but the component which has the strongest effect varies across countries. In the UK health and education benefits (mainly health) have a stronger effect than housing. This is also the case in Canada and in Sweden, where health benefits improve the average incomes of older people very substantially. In Australia and the USA in contrast, housing benefits are more important.

Table 5.5 provides estimates of the percentage of persons with incomes below 50 per cent of average income in the countries included in the analysis. The table distinguishes by income concept and by type of benefit unit. These results are also illustrated in Figures 5.1 to 5.4. These results cannot be directly compared with those of Smeeding, Saunders *et al.* (1992). As noted earlier, this is because the equivalence scales and income units differ. Most importantly, the analysis by Smeeding, Saunders *et al.* (1992) used a `poverty line' that was set at 50 per cent of median cash income in each country, and this measure was not changed to reflect the use of the broader concept of resources. It was argued that this approach would allow direct comparisons of the impact of changing the income concept, which would not be possible if the indicator was changed. In this analysis, we have chosen to adjust the measure of relative low income. Thus, the second panel of the table shows the proportion of persons living in these benefit units, whose equivalent household final income was less than 50 per cent of overall mean household final income, where final income is the sum of cash disposable income and household noncash benefits, adjusted by the McClements equivalence scales. It should also be noted that it is not strictly correct to calculate the percentage change in the level of low income/resources in moving from one concept to another, since the base changes in the process of moving from income to resources.

Table 5.5 and Figures 5.1 to 5.4 show that the proportion of persons with incomes below 50 per cent of the average is significantly lower using final income than when using disposable cash income. For the total population, the difference is greatest in Australia and least in Sweden and the United States. For the older population, the difference is greatest in Sweden and Australia, and then the United Kingdom, and least in the United States. The results for the United Kingdom indicate that there are fewer older people with relative low incomes than any country apart from Sweden and the Netherlands. For the total population, Germany, the Netherlands and Sweden have the lowest proportions with relative low income.

Table 5.5: Relative **low income*** rates (%) **based on disposable income and final income by benefit unit** type**, **mid 1980s**

1) Adjusted disposable cash income

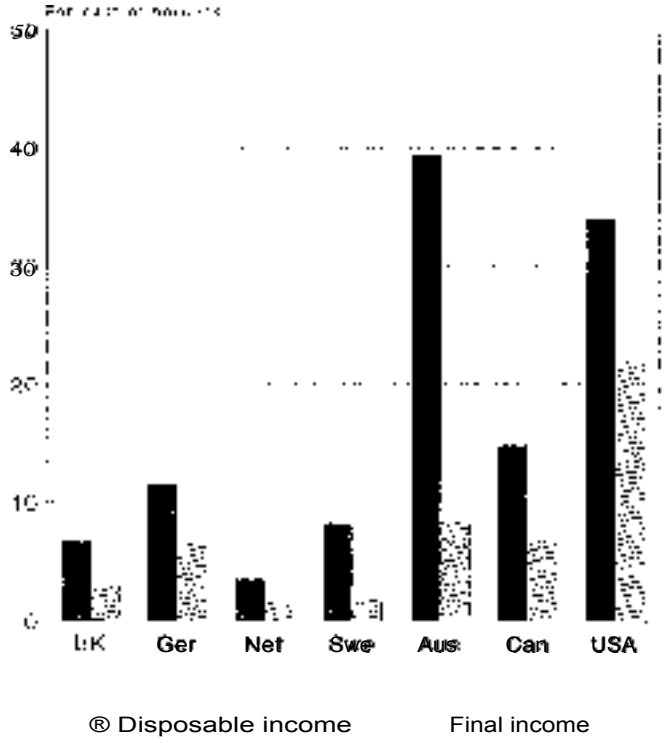
Country	Single older people	Older couples	All older people	Total population
United Kingdom	6.8	9.2	8.1	11.9
West Germany	11.5	10.2	10.9	8.6
Netherlands	3.5	2.7	3.0	8.8
Sweden	8.2	2.0	4.9	7.2
Australia	39.4	23.6	30.0	16.7
Canada	14.8	8.6	11.3	13.3
United States	34.0	17.4	25.3	21.4
2) Adjusted final income (health and education)				
United Kingdom	2.9	2.6	2.7	6.3
West Germany	6.5	3.7	5.1	4.5
Netherlands	1.6	1.3	1.5	*4.9*
Sweden	1.7	0.5	1.1	5.0
Australia	8.2	5.0	6.8	7.1
Canada	6.8	3.1	4,6	7.6
United States	22.0	11.3	16.4	14.2
3) Difference - (2) as per cent of (1)				
United Kingdom	42.6	28.3	33.3	52.9
West Germany	56.5	36.3	46.8	52.3
Netherlands	45.7	48.1	50.0	55.7
Sweden	20.7	25.0	22.4	69.4
Australia	20.8	21.1	22.7	42.5
Canada	45.9	36.0	40.7	57.1
United States	64.7	64.9	64.8	66.4

Notes: * Relative low income rates are calculated as the percentage of persons with adjusted incomes less than half the national mean adjusted cash disposable or final income. Adjusted using the McClements equivalence scale.

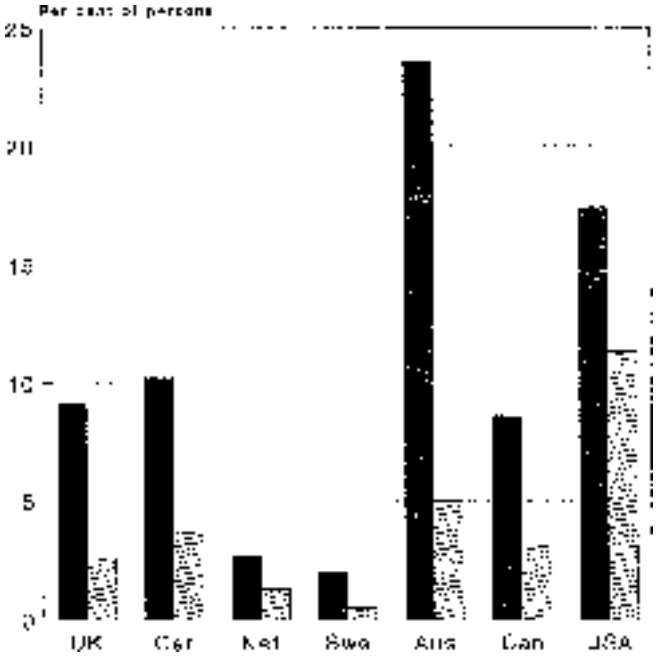
** Older people are women over 60 years of age and men aged over 65.

Source: Estimated from LIS data files.

Figures 5.1: **Percentage of single older people below 50% of average income by income concept**

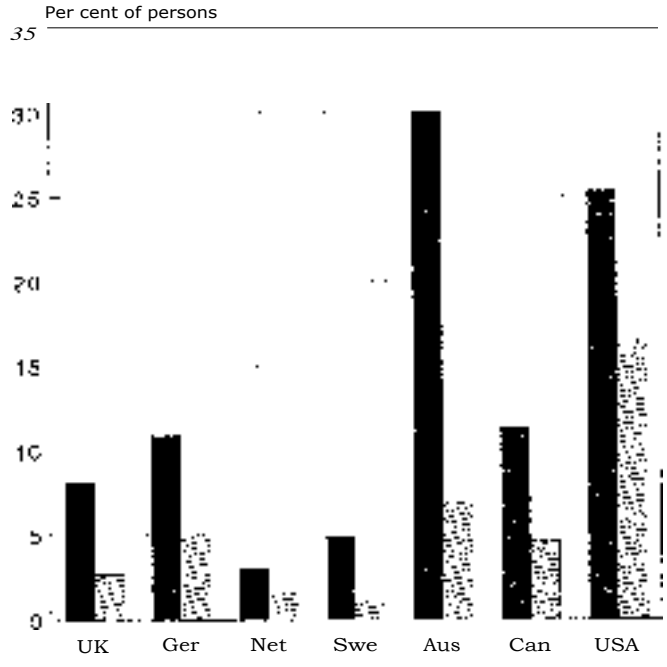


Figures 5.2: Percentage of older **couples** below 50% of average income by income concept



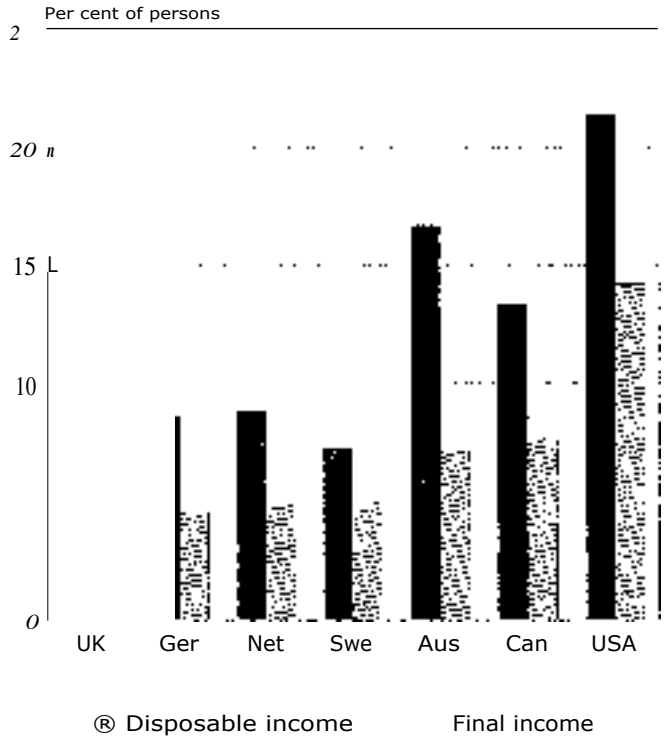
® Disposable income Final income

Figures 5.3: Percentage of all **older people below 50% of average income by income concept**



® Disposable income Final income

Figures 5.4: **Percentage** of **population below 50%** of **average income by income concept**



Tables 5.6.a to 5.6.f show the median incomes of quintiles of older people relative to the median income of the total population according to the differing income concepts. The effects of moving from one concept to another are illustrated in Figures 5.5 to 5.10. Table 5.6.a shows that the median income of all older people in the United Kingdom is 81 per cent of that of the total population when disposable cash income is used as the measure and 85 per cent when final income is used. The differences are somewhat greater for single older people than for couples, and are also greater for the lowest quintile. The relative status of the highest quintile falls somewhat as a proportion of the median income of total population.

The results for Germany suggest that overall the inclusion of noncash income slightly reduces the relative status of older people, whose income falls marginally from 95 to 94 per cent of median income. Presumably, this is due to education benefits being more significant than health benefits. Again, the lowest quintile enjoy the most substantial boost to their relative incomes, but the third, fourth and highest quintiles experience a drop in their relative incomes.

In the Netherlands, the inclusion of noncash income raises the median income of older people from 97 per cent to 110 per cent of the population median. Interestingly, the greatest relative improvement appears to be in the middle quintile.

The results for Sweden differ markedly from those for other countries, with older people being substantially better off when final income is used as the measure, the median income being 80 per cent of the population median cash income and 94 per cent of median final income. The relative differences are greatest for the lowest three quintiles, but all older people in Sweden improve their relative position, a situation which does not occur in any other country. The median final income of all older people in Sweden is ranked equal with that of older people in Germany, and this is largely due to the very favourable situation of the lowest quintiles.

Overall, older people in Australia have the lowest median incomes of any of these countries, although the increase from 64 to 70 per cent is the next largest after

Sweden. The lowest quintile in Australia have the lowest relative cash incomes, although they are not much less than those of the lowest quintile in Germany.

Table 5.6.a: **Median income of quintiles of older people as a percentage of median income of total population, United Kingdom, 1986**

Type of Benefit Unit by Income Concept	Lowest	Second	Third	Fourth	Highest	Total
1. Equivalent Disposable Income						
Single older people	59	72	82	96	146	82
Older couples	57	68	80	104	149	80
All older people	57	70	81	106	148	81
2. Adjusted Final Income						
Single older people	64	76	86	99	136	86
Older couples	63	73	83	102	138	83
All older people	63	75	85	100	137	85

Table 5.6.b: **Median income of quintiles of older people as a percentage of median income of total population, Germany, 1984**

Type of Benefit Unit by Income Concept	Lowest	Second	Third	Fourth	Highest	Total
1. Equivalent Disposable Income						
Single older people	53	75	93	114	168	93
Older couples	56	79	96	120	166	96
All older people	54	77	95	116	167	95
2. Adjusted Final Income						
Single older people	57	76	91	110	156	91
Older couples	60	82	96	115	153	96
All older people	60	79	94	113	156	94

Table 5.6.c: **Median income of quintiles of older people as a percentage of median income of total population, the Netherlands, 1987**

Type of Benefit Unit by Income Concept	Lowest	Second	Third	Fourth	Highest	Total
1. Equivalent Disposable Income						
Single older people	79	88	94	122	194	94
Older couples	76	79	99	127	178	99
All older people	77	88	98	125	184	97
2. Adjusted Final Income						
Single older people	87	96	112	123	175	112
Older couples	80	93	107	128	164	107
All older people	82	94	110	124	167	110

Table 5.6.d: **Median income of quintiles of older people as a percentage of median income of total population, Sweden, 1987**

Type of Benefit Unit by **Income** Concept	Lowest	**Second**	**Third**	**Fourth**	**Highest**	Total
1. Equivalent Disposable Income						
Single older people	53	64	72	84	115	73
Older couples	63	76	86	101	129	86
All older people	57	70	80	94	123	80
2. Adjusted Final Income						
Single older people	65	78	91	104	137	91
Older couples	76	86	95	103	126	95
All older people	70	83	94	104	131	94

Table 5.6.e: **Median income of quintiles of older people as a percentage of median income of total population, Australia, 1985-86**

Type of **Benefit Unit by Income Concept**	**Lowest**	Second	**Third**	**Fourth**	**Highest**	Total
1. Equivalent Disposable Income						
Single older people	53	54	61	80	143	61
Older couples	53	59	66	83	138	66
All older people	51	56	64	82	141	64
2. Adjusted Final Income						
Single older people	55	61	66	81	131	66
Older couples	60	65	72	85	128	72
All older people	57	64	70	83	129	70

Table 5.6.f: **Median income of quintiles of older people as a percentage of median income of total population, Canada, 1987**

Type of Benefit Unit by Income Concept	**Lowest**	**Second**	**Third**	**Fourth**	**Highest**	Total
1. Equivalent Disposable Income						
Single older people	50	66	79	101	164	79
Older couples	*57*	69	84	111	166	84
All older people	55	68	82	108	165	82
2. Adjusted Final Income						
Single older people	60	77	91	108	153	91
Older couples	64	81	97	112	158	97
All older people	62	79	93	110	156	93

Source: Estimated from LIS data files.

The previous results suggest that inequality of incomes is lower when the final income measure is used. This is confirmed in Tables 5.7 and 5.8. Table 5.7 shows one measure of income inequality among the older population, which is calculated by dividing the median income of the highest quintile by the median income of the lowest quintile. That is, this is the ratio of the incomes of the person at the 90th percentile to that of the person at the tenth percentile. In the United Kingdom, this ratio for all older people falls from 2.55 to 2.17; in Germany, it falls from 3.09 to 2.60; in the Netherlands from 3.41 to 2.04; in Sweden from 2.16 to 1.87; and in Australia from 2.76 to 2.26, in Canada from 3.02 to 2.50 and in the USA from 5.19 to 3.81. In the UK, there is somewhat greater inequality among older couples than among single older people, while in the other countries there tends to be greater inequality among singles than among couples. Overall income inequality among the older population is greatest in the USA and least in Sweden.

Figure 5.5: Median income of quintiles of **older people,** % **of** overall median United **Kingdom, 1986**

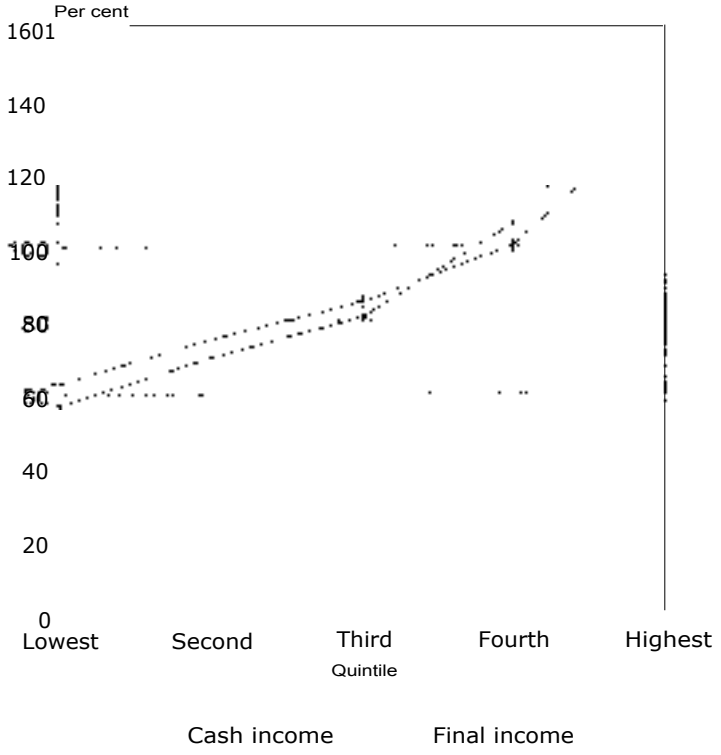


Figure 5.6: Median income of quintiles of **older people,** % **of overall median Germany, 1984**

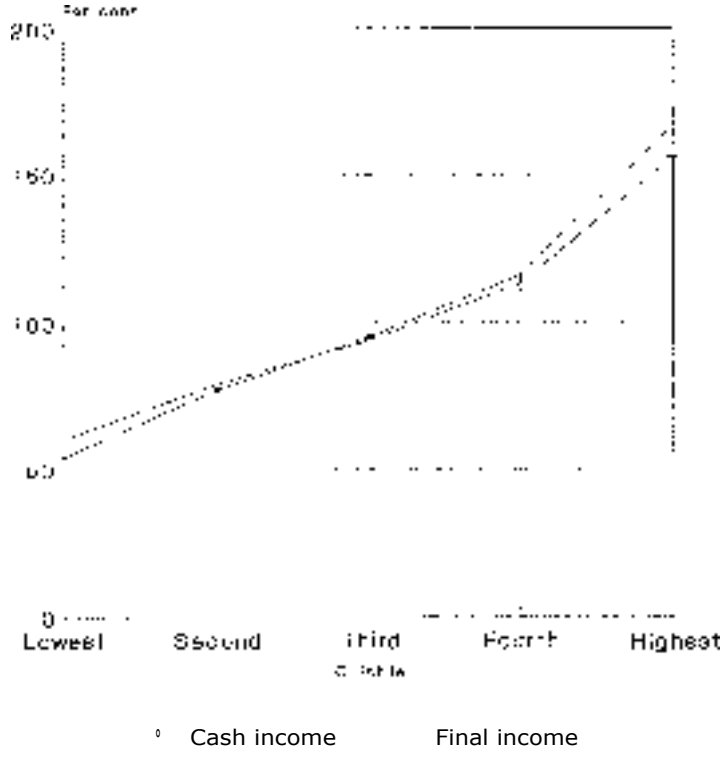


Figure 5.7: **Median income of quintiles of older people,** °/° of overall median the Netherlands, 1987

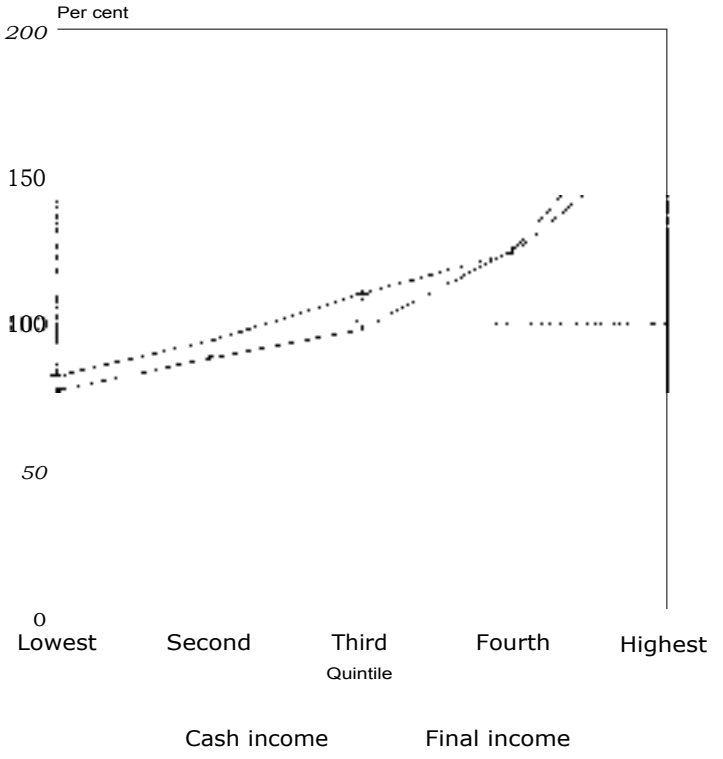


Figure 5.8: **Median income of quintiles of older people,** °lo **of overall median Sweden, 1987**

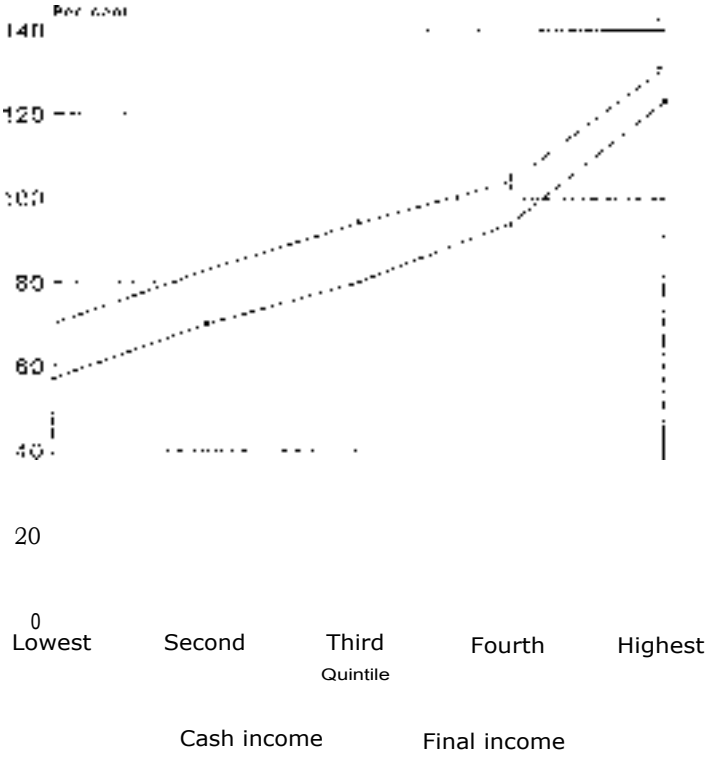


Figure 5.9: Median income of quintiles of **older people, % of overall median Australia, 1985-86**

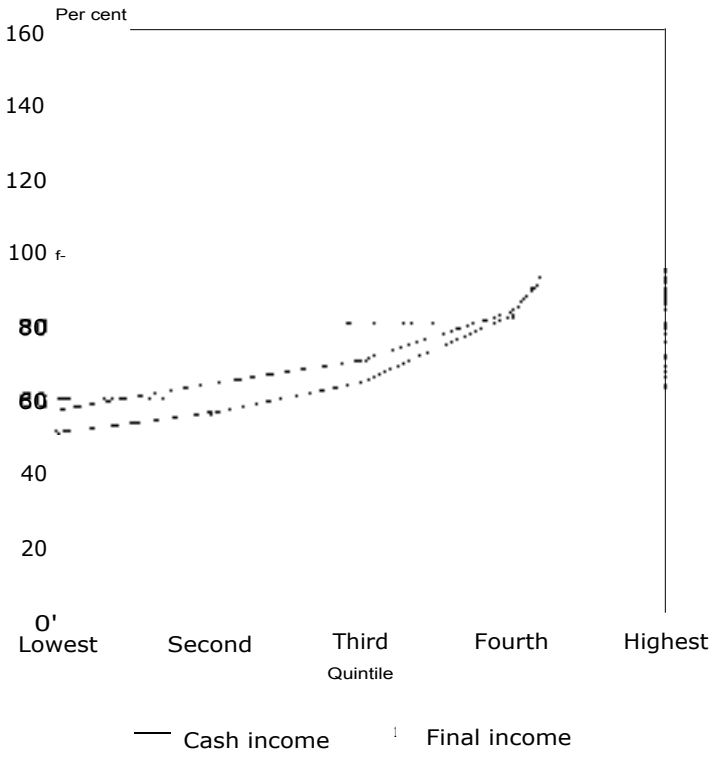


Figure 5.10: **Median income of qunitles of older people, % of overall median Canada 1987**

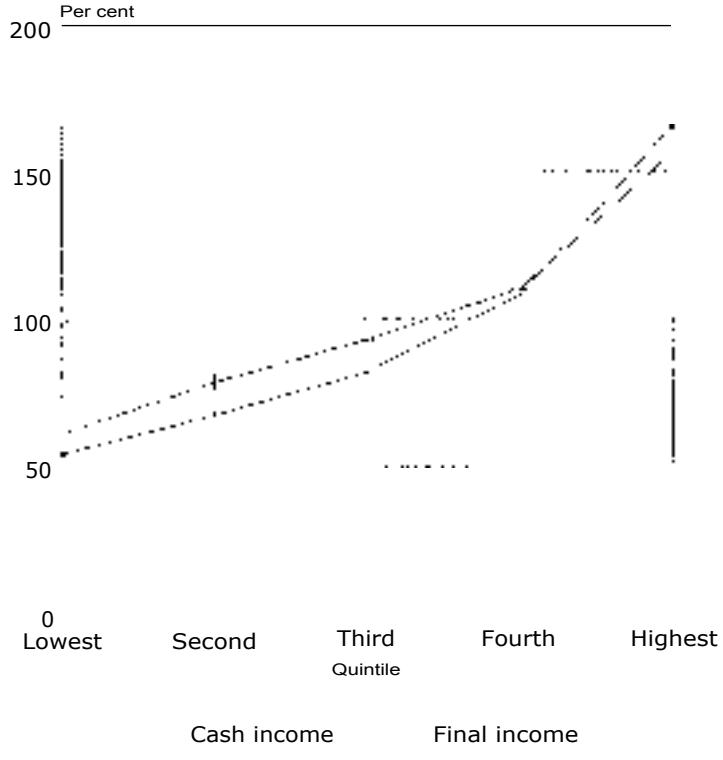


Table 5.7: **Income inequality among older people - ratio of the median income of the richest quintile of older people to the median income of the poorest quintile of older people, by income concept, mid 1980s**

Country	Disposable income			Final income 1		
	Single older people	Older couples	All older people	Single older people	Older couples	All older people
United Kingdom	2.47	2.61	2.55	2.13	2.19	2.17
Germany	3.15	2.96	3.09	2.74	2.55	2.60
Netherlands	2.46	2.34	3.41	2.03	2.06	2.04
Sweden	2.17	2.05	2.16	2.11	1.66	1.87
Australia	2.80	2.60	2.76	2.38	2.13	2.26
Canada	3.27	2.94	3.02	2.57	2.48	2.50
USA	5.90	5.24	5.19	3.56	3.92	3.81

Table 5.8: Gini coefficients for total population, by income concept, mid 1980s

Country	Cash income	Final income 1	Final income 2
United Kingdom	0.29	0.24	0.24
Germany	0.25	0.21	0.21
Netherlands	0.26	0.20	
Sweden	0.21	0.17	
Australia	0.31	0.25	0.24
Canada	0.28	0.23	0.23
USA	0.33	0.29	0.28

Table 5.8 shows overall Gini coefficients for cash income and final income for the total population. These results suggest that inequality in final income is less than in cash income in all countries. The level in the UK is about the same as in Australia, and inequality is lowest in Sweden.

Chapter 6 Discussion and Conclusions

This report has presented a very wide range of evidence on the incomes and living standards of older people in the United Kingdom and similar societies. The most important conclusions to be drawn from this analysis relate to methodological issues. The report has shown that the measured well-being of older people is crucially dependent on methodological and conceptual judgements and the choice of measure.

In general, broadening the concept of resources to encompass government noncash benefits and other forms of imputed income leads to a substantial narrowing of the apparent differences between countries in the outcomes of social policy interventions. Thus, this report suggests that Ringen (1987) and Esping-Andersen (1990) were right to be surprised at the wide differences between countries found in earlier studies using the LIS data. The consensus of earlier comparative research of similarity between countries seems to be supported by this new analysis.

Having said this, the rankings of countries in terms of the proportions of older people with relative low incomes are not affected to the same extent. Countries like Sweden and the Netherlands still come out as the most equal and with the lowest measured extent of relative low income, while the United States remains the most unequal of these wealthy societies, with the highest proportion of older people (and other groups) with relative low incomes.

Health and education benefits have been found (with some exceptions) to *have* rather similar effects across countries. Health benefits are progressive and are of major assistance to older people. Education benefits are also progressive, but of very limited assistance to older people. Imputed income from owner-occupied housing has very different impacts in different countries, a finding of some interest in the United Kingdom, where it can be expected that the extent of home ownership among older people will increase substantially over the next 30 to 50 years.

This is of particular importance in assessing differences between countries or changes over time, since changes over time are analogous to inter-country differences, and *vice versa*. This point has been made by Yates (1991): not only do income distributions differ across countries but so do the level and composition of portfolios of assets and savings. Put simply, in countries like Australia, Canada and the United States, the role of the private sector is given more importance. As a consequence, private savings - including through home-ownership - is more important as part of the process of planning for retirement. Unless the benefits and costs of these private savings are taken into account in distributional analysis, then the outcomes for older people will look less adequate than they actually are, and distributional outcomes will appear more unequal. This may well have significant implications for the United Kingdom, given the increasing level of home ownership and increasing coverage of private pension arrangements.

Our results may also have important implications for specific policy issues such as proposals for targeting of benefits. It has been shown that the standard framework for assessing income distribution will tend to make countries with smaller welfare states look less equal than countries with higher levels of spending on social protection.

A further policy implication of our analysis relates to calls for convergence of social policies across the countries of the European Union. Social policy outcomes should not be measured only in terms of the distribution of cash disposable incomes. Rather it is the level and distribution of the total package of resources available to groups such as older people that should be of concern. Our analysis shows that health and housing benefits may complement or offset the effects of social security transfers. The approach to the provision of social security benefits in any country is therefore formed in an institutional environment which may include specific patterns of health care financing and provision and housing tenure and assistance. And these are not the only relevant institutional factors. This means that changes to social security arrangements also need to be sensitive to the institutional environment, so that changes in one area may need to be complemented or offset by changes in another. Having said this, the most significant institutional differences are between the countries of Europe and those outside the EU such as Australia, Canada and the USA.

While this report has substantially broadened the measurement of the living standards of older people, we have also identified other factors that it has not yet been possible to incorporate into this empirical analysis. It is plausible that some of these policy areas - particularly imputed pension rights - may have a very substantial impact on measured distribution. This suggests that there is still scope for improving the measurement of social policy outcomes.

References

Aaron, H. (1992) 'The economics and politics of pensions: evaluating the choices', in OECD, *Private Pensions and Public Policy,* Paris: OECD.

Abel-Smith, B. and Townsend, P. (1965), *The Poor and the Poorest,* Occasional Papers on Social Administration No. 17, London: G. Bell and Sons.

Achdut, L. and Tamir, Y. (1990) `Retirement and well-being among the elderly' in Smeeding, T., O'Higgins, M. and Rainwater, L. (eds) *Poverty, Inequality and Income Distribution in Comparative Perspective,* Hemel Hempstead: Harvester Wheatsheaf.

Age Concern (1992) *The Coming of Age in Europe: Older People in the European Community,* London: Age Concern.

Aldrich, J. (1982) `The earnings replacement rate of old-age benefits in 12 Countries, 1969-80', *Social Security Bulletin, 45,* 11, November.

Amann, A. (1981) *The Status and Prospects of the Aging in Western Europe,* Eurosocial Occasional Papers No. 8, Vienna: European Centre for Social Welfare Policy and Research.

Association of Swedish County Councils (1983) *Statistical Yearbook for the Counties* in Swedish), Stockholm: Association of Swedish County Councils.

Atkinson, A.B. (1969) *Poverty in Britain and the Reform of Social Security,* Cambridge: Cambridge University Press.

Atkinson, A.B. (1985) *How Should We Measure Poverty: Some Conceptual Issues,* ESRC Programme on Taxation, Incentives and the Distribution of Income Discussion Paper No. 82, London: London School of Economics.

Atkinson, A.B. (1987) `On the measurement of poverty', *Econometrica,* 55, 4: 749-764.

Atkinson, A.B. (1989) 'Poverty' in Eatwell, J., Milgate, M. and Newman, P. (eds) *The New Palgrave: Social Economics,* London: Macmillan.

Atkinson, A.B. (1990) *Comparing Poverty Rates Internationally: Lessons from Recent Studies in OECD Countries,* Welfare State Programme Discussion Paper WSP 53, London: STICERD, London School of Economics.

Atkinson, A.B. (1991) `Social insurance', *Geneva Papers on Risk and Social Insurance Theory,* 16, 2: 113-131.

Atkinson, A.B. (1993) *What is Happening to the Distribution of Income in the UK?,* Welfare State Programme Discussion Paper WSP 87, London: STICERD, London School of Economics.

Atkinson, A.B. and Sutherland, H. (1991) *Two Nations in Early Retirement?: The Case of Britain,* Welfare State Programme Discussion Paper WSP 56, London: STICERD, London School of Economics.

Australian Bureau of Statistics (1985; 1986) *National Schools Statistics Collection,* Canberra: Australian Government Publishing Service.

Australian Bureau of Statistics (1989) *Estimated Resident Population by Country of Birth, Age and Sex: Australia,* Canberra: Australian Government Publishing Service.

Australian Bureau of Statistics (1992a) *Social Indicators Australia,* Canberra: Australian Government Publishing Service.

Australian Bureau of Statistics (1992b) *Year Book Australia,* Canberra: Australian Government Publishing Service.

Australian Department of Social Security (1991) *Annual Report 1990-91,* Canberra: Australian Government Publishing Service.

Australian Institute of Health and Welfare (1993) *Health Expenditure Bulletin,* 8, April: 15-16.

Baldwin, P. (1990) *The Politics of Social Solidarity: Class Bases of the European Welfare State 1875-1975,* Cambridge: Cambridge University Press.

Bardsley, P. and McRae, I. (1982) `A test of McClements' method for the estimation of equivalence scales', *Journal of Public Economics,* 17: 119-22.

Baldwin, S. and Falkingham, J. (eds) (1994) *Social Security and Social Change: New Challenges to the Beveridge Model,* Hemel Hempstead: Harvester Wheatsheaf.

Barr, N. (1987) *The Economics of the Welfare State,* London: Weidenfeld and Nicholson.

Barr, N. (1990) *Economic Theory and the Welfare State: A Survey and Reinterpretation,* Welfare State Programme Discussion Paper WSP 54, London: STICERD, London School of Economics.

Barr, N. and Coulter, F. (1990) `Social security: solution or problem?' in Hills, J. (ed) *The State of Welfare: The Welfare State in Britain since 1974,* Oxford: Clarendon Press.

Beckerman, W. (1979) *Poverty and the Impact of Income Maintenance Programmes in Four Developed Countries,* Geneva: International Labour Office.

Berghman, J., Van Vorselen, L. and Kehla, J. (1991) `Ageing and Social Security Financing: Old-age benefits and health care expenditure in the Council of Europe member States and their funding', *Colloquy on Old-Age Benefits and Health Care: Impact on Present and Future Funding of Social Security,* Strasbourg: Council of Europe.

Beveridge, W. (1942) *Social Insurance and Allied Services,* Cmd 6404, London: HMSO.

Bolderson, H. (1988) `Comparing social policies: some problems of method and the case of social security benefits in Australia, Britain and the USA', *Journal of Social Policy,* 17, 3: 267-288.

Bolderson, H. and Mabbett, D. (1991) *Social Policy and Social Security in Australia, Britain and the USA,* Aldershot: Avebury/Gower.

Bolderson, H. and Mabbett, D. (1992) `Mongrels or thoroughbreds: a cross-national look at social security systems', Paper presented at the Conference on *Social Security: 50 Years after Beveridge, University of York,* 27-30 September.

Bowers, J. and Dunlop, M. (1984) `Education and welfare concerns in income support for young people, *Social Security Journal* (Australia), December, 20-41.

Bradbury, B., Rossiter, C. and Vipond, J. (1986) *Poverty, Before and After Pe' r-- for Housing,* Reports and Proceedings, Sydney: Social Policy Research Cen,_e, University of New South Wales, Australia.

Bradbury, B., Doyle, J., and Whiteford, P. (1990) *Trends in the Disposable Incomes of Australian Families,* 1982-83 to 1989-90, Discussion Paper No. 16. Sydney: Social Policy Research Centre, University of New South Wales.

Bradbury, B., and Saunders, P. (1990) *How Reliable are Estimates of Poverty in Australia? Some Sensitivity Tests for the Period 1981-82 to 1985-86,* Discussion Paper No. 18, Sydney: Social Policy Research Centre, University of New South Wales.

Bradbury, B., Ross, R. and Doyle, J. (1991) *Unemployment Benefit Replacement Rates,* Policy Research Paper No. 60, Canberra: Department of Social Security.

Bradshaw, J. (1994) `Simulating Policies: An Example in Comparative Method', Paper for the Maison Francaise Conference on *Comparing Social Welfare Systems in Europe,* University of Oxford, May.

Bradshaw, J. and Piachaud, D. (1980) *Child Support in the European Community,* London: Bedford Square Press.

Bradshaw, J., Ditch, J., Holmes, H. and Whiteford, P. (1993) *Support for Children: A Comparison of Arrangements in Fifteen Countries,* Department of Social Security Research Report No. 21, London: HMSO.

Brocas, A. M. (1988) `Equal treatment of men and women in social security', *International Social Security Review,* 3: 231-249.

Brown, J. (1990) *Social Security for Retirement,* York: Joseph Rowntree Foundation.

Buhmann, B., Rainwater, L., Schmaus, G., and Smeeding, T. (1988) `Equivalence scales, well-being, inequality and poverty: sensitivity estimates across ten countries using the Luxembourg Income Study (LIS) database', *The Review of Income and Wealth,* June, 115-141.

Cameron, G. and Wolfson, M. (forthcoming) `Noncash and cash income in Canada', in Smeeding, T. (ed), *The Distribution of Cash and Noncash Income in Seven Countries,* Luxembourg: CEPS/INSTEAD.

Castles, F.G. and Mitchell, D. (1992) `Identifying welfare state regimes: the links between, politics, instruments and outcomes', *Governance. 5,* 1: 1-26.

Central Statistical Office (1988) `The effects of taxes and benefits on household income, 1986', *Economic Trends,* 422: 89-118.

Central Statistical Office (1990) *Economic Trends Annual Supplement,* London: HMSO.

Central Statistical Office (1991a) *Social Trends 21,* London: HMSO.

Central Statistical Office (1991b) `The effects of taxes and benefits on household income, 1988', *Economic Trends,* 449: 107-149.

Central Statistical Office (1993) *Annual Abstract of Statistics 1993,* London: HMSO.

Child Poverty Action Group (1986) *National Welfare Benefits Handbook,* 16th Edition, 1986-87, London: CPAG.

Coder, J., Smeeding, T., and Torrey, B.B. (1990) *The Change in the Economic Status of the Low-Income Elderly in Three Industrial Countries: Circa 1979-1986,* Luxembourg Income Study Working Paper No. 47, Luxembourg: CEPS/INSTEAD.

Coder, J., Smeeding, T. and Tapp, J. (forthcoming) `LIS Noncash Study: Country Report for the USA', in Smeeding, T. (ed) *The Distribution of Cash and Noncash Income in Seven Countries,* Luxembourg: CEPS/INSTEAD.

Commission of the European Communities (1992) *Social Protection in the Member States of the Community, Situation on July 1st 1992 and Evolution,* Brussels: MISSOC.

Coulter, F., Cowell, F. and Jenkins, S. (1992) `Equivalence scale relativities and the extent of inequality and poverty', *Economic Journal,* 102: 1067-1082.

Cram, L. (1993) `Calling the tune without paying the piper? Social policy regulation: the role of the Commission in European Community Social Policy', *Policy and Politics,* 21, 2: 135-146.

Creedy J. (1992) `Increasing the Time Period in the Measurement of Inequality', in Slottje, D.J. (ed), *Research on Economic Inequality, Volume 2,* Greenwich: JAI Press.

Crystal S. and Shea, D. (1990) `The economic well-being of the elderly', *Review of Income and Wealth,* 36, 3: 227-247.

Danziger, S., van der Gaag, J., Smolensky, E. and Taussig, M. (1984) *Income Transfers and the Economic Status of the Elderly,* Institute for Research on Poverty, Reprint No. 498, University of Wisconsin-Madison.

Dawson, A. and Evans, G, (1987) `Pensioners' incomes and expenditure 1970-1985', *Employment Gazette,* May, 243-252.

Day, L. (1978) `Government pensions for the aged in 19 industrial countries: demonstration of a method for cross-national evaluation', *Comparative Studies in Sociology,* 1: 217-233.

de Tombeur, *C. et al* (1993) LIS *Information Guide,* Revised Luxembourg Income Study Working Paper No. 7, Luxembourg: CEPS/INSTEAD.

Deacon, A. and Bradshaw, J. (1983) *Reserved for the Poor. The Means Test in British Social Policy,* Oxford: Martin Robertson.

Deleek, H. (ed) (1991) *Indicators of Poverty and Adequacy of Social Security,* Antwerp: Centre for Social Policy.

Department of Education and Science (1985) *International Statistical Comparisons of the Education and Training of 16 to 18 year olds,* Statistical Bulletin 10/85, London: DES.

Department of Education and Science (1986a) *International Statistical Comparisons of the Education and Training of 16 to 18 year olds,* Statistical Bulletin 16/86, London: DES.

Department of Education and Science (1986b) *Education in the Federal Republic of Germany: Aspects of Curriculum and Assessment,* London: HMSO.

Department of Education and Science (1988) *Education Statistics for the United Kingdom 1988,* London: HMSO.

Department of Education and Science (1989) *Education Statistics for the United Kingdom 1989,* London: HMSO.

Department of Employment (1988) *Family Expenditure Survey 1986 (Revised),* London: HMSO.

Department of Health and Social Security (1988) *Low Income Statistics: Report o a Technical Review,* London: DHSS.

Department of Health and Social Security, and Office of Population Censuses and Surveys (1987) *Hospital In-patient Enquiry 1985. Summary Tables,* London: DHSS/OPCS.

Department of Health and Social Security, and Welsh Office (1987) *Health Services Costing Returns,* London: DHSS/Welsh Office.

Department of Social Security (1990a) *Households Below Average Income: A Statistical Analysis, 1981-1987,* London: HMSO.

Department of Social Security (1991b) *Households Below Average Income Stocktaking: Report of a Working Group,* London: DSS.

Department of Social Security (1991c) *Social Security: The Government's Expenditure Plans 1991-92 to 1993-94,* Cmnd. 1514, London: HMSO.

Department of Social Security (1992a) *Households Below Average Income: A Statistical Analysis 1979-1988/89,* London: HMSO.

Department of Social Security (1992b) *Social Security Statistics 1991,* London: HMSO.

Department of Social Security (1993a) *Households Below Average Income: A Statistical Analysis 1979-1990/91,* London: HMSO.

Department of Social Security (1993b) *Social Security Statistics 1993,* London: HMSO.

Department of Social Security (1993c) *The Growth of Social Security,* London: HMSO.

Department of Social Security (1993d) *Containing the Cost of Social Security - The International Context,* London: HMSO.

Department of Social Security (1994a) *Households Below Average Income: A Statistical Analysis 1979-1991/92,* London: HMSO.

Department of Social Security (1994b) `Pensioners' incomes increase by over 50 per cent since 1979', *Department of Social Security press release.*

Department of the Environment (1988) *English House Conditions Survey 1986,* London: HMSO.

Dilnot, A. and Johnson, P. (1992) `What pension should the state provide?', *Fiscal Studies,* 13, 4: 1-19.

Ditch, J. (1992) *Social Policy Implications and Information Requirements of the Single European Act,* Occasional Paper No. 24, Belfast: Policy Planning and Research Unit, Department of Finance and Personnel.

Dobroschke-Kohn, W. and Hauser, R. (forthcoming) `Country report for the Federal Republic of Germany', in Smeeding, T. (ed) *The Distribution of Cash and Noncash Income in Seven Countries,* Luxembourg: CEPS/INSTEAD.

Einerhand, M., Melis, T. and Rovers, M. (1994) *Social Security and Taxes: A study on the international comparability of statistics with regard to some aspects of social security,* Research Memorandum 94/1, The Hague: Ministry of Social Affairs and Employment.

Erikson, R. and Uusitalo, H. (1985) `The Scandinavian approach to Welfare Research', in Erikson, R., Hansen, R.J., Ringen, S. and Uusitalo, H. (eds) *The Scandinavian Model: Welfare States and Welfare Research,* London: M.E. Sharpe.

Esping-Andersen, G. (1990) *The Three Worlds of Welfare Capitalism,* Cambridge: Polity Press.

European Institute of Social Security (1993) *EISS Yearbook, 1992,* Leuven: Acco.

Eurostat (various years) *Social Portrait of Europe,* Luxembourg: Statistical Office of the European Communities.

Eurostat (1990) *Poverty in Figures: Europe in the Early 1980s,* Luxembourg: Statistical Office of the European Communities.

Eurostat (1993) *Social Protection in Europe,* Luxembourg: Statistical Office of the European Communities.

Evandrou, M., Falkingham, J., Hills, J. and Le Grand, J. (1992) *The Distribution of Welfare Benefits in Kind,* Welfare State Programme Discussion Paper WSP 68, London: STICERD, London School of Economics.

Falkingham, J. (1987) *The Demographic Characteristics of Britain's Aged Population - A Survey,* Welfare State Programme Research Note No. 7, London: STICERD, London School of Economics.

Falkingham, J., Hills, J., and Lessof, C. (1993) *William Beveridge Versus Robin Hood: Social Security and Redistribution over the Life Cycle,* Welfare State Programme Discussion Paper WSP 88, London: STICERD, London School of Economics.

Falkingham, J. and Victor, C. (1991) *The Myth of the Woopie?: Incomes, the Elderly, and Targeting Welfare,* Welfare State Programme Discussion Paper WSP 55, London: STICERD, London School of Economics.

Fallis, G. (1990) `Housing Finance and Housing Subsidies in Canada', *Urban Studies, 27,* 6: 877-903.

Federal Statistical Office (various years) *Statistical Yearbook,* Bonn: Federal Statistical Office.

Feldstein, M. (1974) `Social Security, Induced Retirement and Aggregate Capital Accumulation', *Journal of Political Economy,* 82: 905-926.

Fiegehen, G.C. (1986) `Income after retirement' in Central Statistical Office, *Social Trends 16,* London: HMSO.

Flora, P. (ed) (1986) *Growth to Limits: The Western European We fare States since World War II,* Berlin: De Gruyter.

Foster, C. (1988) *Towards a National Retirement Incomes Policy,* Issues Paper No. 6, Canberra: Social Security Review.

Foster, H. (1992) *Employee Benefits in Europe and the USA,* Godwins, Fifth Edition, London: Longman.

Foster, J. and Shorrocks, A. (1988) `Poverty orderings', *Econometrica,* 56: 173-177.

Fritzell, J. and Hedstrom, P. (fortcoming) `Cash and Noncash Income in the Swedish Welfare State', in Smeeding, T. (ed), *The Distribution of Cash and Noncash Income in Seven Countries,* Luxembourg: CEPS/INSTEAD.

Fry, V. and Stark, G. (1991) `New rich or old poor: poverty, take-up and the indexation of the state pension', *Fiscal Studies,* 12, 1: 67-77.

Giles, C. and Webb, S. (1993) `A guide to poverty statistics', *Fiscal Studies,* 14, *2:* 74-97.

Ginn, J. and Arber, S. (1992) `Towards women's independence: pension systems in three contrasting welfare states', *Journal of European Social Policy, 2,* 4: 255-277.

Glendinning, C. and Millar, J. (eds) (1987) *Women and Poverty in Britain,* Brighton: Wheatsheaf Books.

Goedhart, T., Halberstadt, V., Kapteyn, A. and van Praag, B. (1977) The Poverty Line: Concept and Measurement', *Journal of Human Resources,* 12, 4: 503-520.

Good, F.J. (1990) `Estimates of the distribution of personal wealth I: marketable wealth of individuals 1976 to 1988/89', *Economic Trends,* 444: 137-149.

Government Actuary (1990) *National Insurance Fund Long Term Financial Estimates,* London: HMSO.

Gran, B. (1993) *Three Worlds of Old-Age Decommodcation? A Comparative Analysis of Old-Age Support and Inequality Using the Luxembourg Income Study,* Luxembourg Income Study Working Paper No. 104, Luxembourg: CEPS/INSTEAD.

Green Paper (1985) *The Reform of Social Security,* Volumes 1 to 3, Cmnd. 9517, 9518, 9519, London: HMSO.

Groves, D. (1988) `Occupational pension provision and women's poverty in old age', in Glendinning, C. and Millar, M. (eds) *Women and Poverty in Britain,* Brighton: Wheatsheaf Books.

Hagenaars, A. *et al.* (1987) `Distribution of Cash and Noncash Income in the Netherlands', Luxembourg Income Study Working Paper No. 18, Luxembourg: CEPS/INSTEAD.

Hagenaars, A. Zaidi, M. and de Vos, K. (forthcoming) `Noncash and cash income in the Netherlands', in Smeeding, T. (ed) *The Distribution of Cash and Noncash Income in Seven Countries,* Luxembourg: CEPS/INSTEAD.

Harding, A. (1992) *Income Distribution and Redistribution Across the Lifecycle: Evidence from Australia,* Welfare State Programme Discussion Paper WSP 70, London: STICERD, London School of Economics.

Harding, A. (1993) `Lifetime vs Annual Tax-Transfer Incidence: How Much Less Progressive?', *Economic Record,* 69, 205: 179-192.

Harris, G. and Davies, M. (1994) *Income Measures for Official Low Income Statistics: The Treatment of Housing Costs and Local Government Taxes,* Analytical Notes No. 2, London: Analytical Services Division, Department of Social Security.

Hatland, A. Overbye, E. and Vigran, A. (1993) *Minimum Income Protection During Old Age in Europe,* Report to the Council of Europe, Oslo: Institute for Applied Social Research.

Hauser, R., Becker, I. and Standecke-Scheid, S. (1987) *Selected Noncash Income Sources in the Federal Republic of Germany: Macro Economic and Distributional Effects,* Luxembourg Income Study Working Paper No. 15, Luxembourg: CEPS/INSTEAD.

Health and Welfare Canada (1991) *Inventory of Income Security Programs: July 1990,* Ottawa: Department of National Health and Welfare.

Hedin, B. (1993) *Growing Old in Sweden,* Stockholm: The Swedish Institute and the National Board of Health and Welfare.

Hedstrom, P. and Ringen, S. (1990) `Age and Income in Contemporary Society', in Smeeding, T., O'Higgins, M. and Rainwater, L. (eds) *Poverty, Inequality and Income Distribution in Comparative Perspective,* Hemel Hempstead: Harvester Wheatsheaf.

Heidenheimer, A., Heclo, H. and Adams, C.T. (1983) *Comparative Public Policy: The Politics of Social Choice in Europe and America,* New York: St. Martin's.

Higgins, J. (1981) *States of Welfare: Comparative Analysis* in Social Policy, Oxford: Blackwell.

Higgins, J. (1986) `Comparative Public Policy', *The Quarterly Journal of Social Affairs, 2 3:* 221-242.

Hills, J. (1992) *Does Britain have a "Welfare Generation"? An Empirical Analysis of Intergenerational Equity,* Welfare State Programme Discussion Paper WSP 76, London: STICERD, London School of Economics.

Hills, J., Ditch, J. and Glennerster, H. (1994) *Beveridge and Social Security: An International Retrospective,* Oxford: Clarendon Press.

HM Treasury (1989) *The Government's Expenditure Plans 1989-90 to 1991-92,* Chapter 14, Cmnd. 614, London: HMSO.

Holden, K. and Smeeding, T. (1990) *The Poor, the Rich, and the Insecure Elderly Caught in Between,* Institute for Research on Poverty, Reprint No. 637, University of Wisconsin-Madison.

Hutton S. and Whiteford, P. (1992) `Women and Social Security in Retirement: A Comparative Analysis', Paper presented to the Conference on *Social Security: 50 Years after Beveridge,* University of York, 27-30 September.

Jenkins, S. (1991) `Poverty Measurement and the Within-Household Distribution: Agenda for Action', *Journal of Social Policy,* 20, 4: 457-484.

Jenkins, S. (forthcoming) `Noncash and Cash Income in the UK', in Smeeding, T. (ed) *The Distribution of Cash and Noncash Income in Seven Countries,* Luxembourg: CEPS/INSTEAD.

Johnson, P. and Stark, G. (1989) `Ten Years of Mrs Thatcher: The Distributional Consequences', *Fiscal Studies,* 10, 2: 29-37.

Johnson, P. and Webb, S. (1989) `Counting people on low incomes: the effect of recent changes in official statisics', *Fiscal Studies,* 10, 4: 66-82.

Johnson, P., Dilnot, A., Disney, R. and Whitehouse, E. (1992) *Income: Pensions, Earnings and Savings in the Third Age,* Carnegie Inquiry into the Third Age Research Paper No. 2, Dunfermline: Carnegie United Kingdom Trust.

Johnson, P. and Webb, S. (1992) `The Treatment of Housing in Official Low Income Statistics', *Journal of the Royal Statistical Society,* Series A, 155, 2.

Jones, C. (1985a) `Types of Welfare Capitalism', *Government and Opposition, 20, 3:* 328-342.

Jones, C. (1985b) *Patterns of Social Policy: An Introduction to Comparative Analysis,* London: Tavistock.

Jones, M. (1990) *The Australian Welfare State,* Third Edition, Sydney: Allen and Unwin.

Joshi, H. and Davies, H. (1991) *The Pension Consequences of Divorce,* Discussion Paper Series No. 550, London: Centre for Economic Policy Research.

Kamerman, S. and Kahn, A. (1983) *Income Transfers for Families with Children: An Eight Country Study,* Philadelphia: Temple University Press.

Kangas, O. (1994) `The Merging of Welfare State Models? Past and Present Trends in Swedish and Finnish Social Policy', *Journal of European Social Policy,* 4, *2:* 79-94.

Kangas, O. and Palme, J. (1990) *Statism Eroded? Labour Market Benefits and the Challenges to the Scandinavian Welfare States,* Paper prepared for the ISA World Congress RC19, Poverty, Welfare and Social Policy, Madrid, July 9-13.

Kangas, O. and Palme, J. (1992) *Class Politics and Institutional Feedbacks: Development of Occupational Pensions in Finland and Sweden,* Stockholm: Swedish Institute for Social Research.

Kay, J. A. and King, M.A. (1990) *The British Tax System,* 5th edition, Oxford: Oxford University Press.

Klein, R. (1985) `Public expenditure in an inflationary world', in Lindberg, L. and Maier, C. (eds) *The Politics of Inflation and Economic Stagnation,* Washington, D.C.: Brookings Institution.

Kohl, J. (1990) *Minimum Standards in Old Age Security and the Problem of Poverty in Old Age,* Luxembourg Income Study Working Paper No. 50, Luxembourg: CEPS/INSTEAD.

Kohl, J. (1992) `The public/private mix in the income package of the elderly', Paper presented to the Conference on *Social Security: 50 Years after Beveridge,* University of York, 27-30 September.

Korpi, W. and Palme, J. (1994) `The Strategy of Equality and the Paradox of Redistribution', Paper presented to the *Social Policy Association* Annual Conference, University of Liverpool, July.

Labour Research (1993) `Britain: a pensioners' nightmare', *Labour Research,* January, 7-9.

Laczko, F. (1990) `New poverty and the old poor: pensioners' incomes in the European Community', *Ageing and Society,* 10, 3: 261-277.

Layard, R. (1977) `On Measuring the Redistribution of Lifetime Income', in Feldstein, M.S. and Inman, R.P. (eds) *The Economics of Public Services,* London: Macmillan.

Le Grand, J. (1982) *The Strategy of Equality. Redistribution and the Welfare Services,* London: George Allen & Unwin.

Le Grand, J. (1991) `Some implications of 1992 and beyond for social security in Europe', Paper presented to DSSiESRC Seminar on *Planning a Strategy for Social Security Research in the 1990s,* January, Bristol.

Lewis, J. (1992) `Gender and Welfare State Regimes', *Journal of European Social Policy, 2 (3),* 159-173.

Lister, R. (1992) *Women's Economic Dependency and Social Security,* Manchester: Equal Opportunities Commission.

Lister, R. (1994) "She has other duties' - women, citizenship, and social security", in Baldwin, S. and Falkingham, J. (eds) *Social Security and Social Change,* Hemel Hempstead: Harvester Wheatsheaf.

Low Pay Review (1988) `Poverty: is the Government being statistical with the truth?', *Low Pay Review,* 34, Summer, 8-13.

Lundqvist, L. (1992) The example of housing tenures in Scandinavia', in Ellingsen, L. and Torgersen, U. (eds), *What Kind of Safety Net: The Welfare State in Norway and Eastern European Countries,* Oslo: Institute for Applied Social Research (INAS).

Macdonald, M. (1985) *Government Welfare Benefits and the Social Safety Net,* Institute for Research on Poverty Reprint No. 526, University of Wisconsin-Madison.

Mackintosh, S., Means, R. and Leather, P. (1990) *Housing in Later Life: The Housing Finance Implications of an Ageing Society,* Bristol: School for Advanced Urban Studies, University of Bristol.

McClements, L. (1977) `Equivalence Scales for Children', *Journal of Public Economics, 8, 2:* 191-210.

McKay, S. (1992) *Pensioners' Assets,* London: Policy Studies Institute.

McVicar, N. (1985) `Review of Kamerman and Kahn', *Social Security Journal,* June, 88-95.

Millar, J. (1991) `Bearing the Costs', in Becker, S. (ed) *Windows of Opportunity, Public Policy and the Poor,* London: Child Poverty Action Group.

Ministry of Pensions and National Insurance (1966) *Financial and Other Circumstances of Retirement Pensioners,* London: HMSO.

Mishra, R. (1990) *The Welfare State in Capitalist Society,* New York: Harvester Wheatsheaf.

Mishra, R. (1993) `Typologies of the Welfare State and Comparative Analysis: The `Liberal' Welfare State', Paper for the Conference on *Comparative Research on Welfare States in Transition,* International Sociological Association RC 19, University of Oxford, September.

MISSOC (1991) *Social Protection in the Member States of the European Community, Situation on July 1st 1990 and Evolution,* Brussels: Directorate-General of Employment, Industrial Relations and Social Affairs.

Mitchell, D. (1991a) *Income Transfers in Ten Welfare States,* Aldershot: Avebury.

Mitchell, D. (1991b) *Comparing Income Transfer Systems: Is Australia the Poor Relation?,* Luxembourg Income Study Working Paper No. 56, Luxembourg: CEPS/INSTEAD.

Mitchell, D. and Bradshaw, J. (1991) *Lone Parents and Their Incomes: A Comparative Study of Ten Countries,* Interim Report, York: Department of Social Policy and Social Work, University of York.

Moffitt, R. (1984) *Trends in Social Security Wealth by Cohort,* Institute for Research on Poverty, Reprint No. 512, University of Wisconsin-Madison.

Muellbauer, J. (1979) `McClements on Equivalence Scales for Children', *Journal of Public Economics,* 12: 221-31.

Muellbauer, J. (1980) `The Estimation of the Prais-Houthakker Model of Equivalence Scales', *Econometrica,* 48, 1: 153-76.

Musgrave, R.A. and Musgrave, P.B. (1984) *Public Finance in Theory and Practice,* Fourth Edition, New York: McGraw-Hill.

Myles, J. (1983) `Comparative Public Policies for the Elderly: Framework and Resources for Analysis', in Guillemard, A.M. (ed) *Old Age and the Welfare State,* London: Sage Publications.

Myles, J. (1984) *Old Age in the Welfare State: The Political Economy of Public Pensions,* Boston: Little, Brown & Co.

Nolan, B. (1989) `An evaluation of the new official low income statistics', *Fiscal Studies,* 10, 4: 53-65.

Nordic Statistical Secretariat (ed) (various years) *Yearbook of Nordic Statistics,* Copenhagen: Nordic Council of Ministers and Nordic Statistical Secretariat.

Northwestern University, Department of Sociology (1991) *Comparative Welfare State Project: Aggregate Data Release,* Evanston Il.: Northwestern University.

O'Higgins, M. (1988) `The allocation of public resources to children and the elderly in OECD countries', in Palmer, J.L., Smeeding, T. and Torrey, B. (eds) *The Vulnerable,* Washington DC: The Urban Institute Press.

0' Higgins, M., Bradshaw, J. and Walker, R. (1988) Income Distribution over the Life Cycle', in Walker, R. and Parker, G. (eds) *Money Matters: Income, Wealth and Financial Welfare,* London: Sage Publications.

O'Higgins, M., Rainwater, L., and Smeeding, T. (1990) `The significance of LIS for comparative social policy research', in Smeeding, T., O'Higgins, M., and Rainwater, L. (eds) *Poverty, Inequality and Income Distribution in Comparative Perspective,* New York: Harvester Wheatsheaf.

O'Higgins, M. Schmaus, G. and Stephenson, G. (1990) `Income Distribution and Redistribution: A Microdata Analysis for Seven Countries', in Smeeding, T., O'Higgins, M. and Rainwater, L. (eds) *Poverty, Inequality and Income Distribution in Comparative Perspective,* Hemel Hempstead: Harvester Wheatsheaf.

O'Higgins, M. and Jenkins, S. (1990) `Poverty in the EC: 1975, 1980, 1985' in Teekens, R. and Van Praag, B. (eds) *Analysing Poverty in the European Community,* Luxembourg: Eurostat.

Office of Health Economics (1989) *Compendium of Health Statistics,* London: Office of Health Economics.

Office of Population Censuses and Surveys (various years), *General Household Survey,* London: HMSO.

Organisation for Economic Co-operation and Development (1980, 1987a, 1990) *The Tax/Benefit Position of Production Workers,* Paris: OECD.

Organisation for Economic Co-operation and Development (1987b) *National Accounts, 1970-1985, Purchasing Power Parities Supplement,* Paris: OECD.

Organisation for Economic Co-operation and Development (1988a) *Reforming Public Pensions,* Social Policy Studies No. 5, Paris: OECD.

Organisation for Economic Co-operation and Development (1988b) *The Future o Social Protection,* Social Policy Studies No. 6, Paris: OECD.

Organisation for Economic Co-operation and Development (1988c) *Ageing Populations: The Social Policy Implications,* Paris: OECD.

Organisation for Economic Co-operation and Development (1990) *Health Care Systems in Transition,* Paris: OECD.

Organisation for Economic Co-operation and Development (1992a) *Main Economic Indicators,* Paris: OECD.

Organisation for Economic Co-operation and Development (1992b) *Country Studies,* Paris: OECD.

Organisation for Economic Co-operation and Development (1992c) *The Reform of Health Care: A Comparative Analysis of Seven OECD Countries,* Paris: OECD.

Organisation for Economic Co-operation and Development (1993) *Health Systems, Volumes I and II,* Paris: OECD.

Qverbye, E. (1992) *Public or Private Pensions? Pensions and Pension Politics in the Nordic Countries,* Working Paper No. 38, Institute of Industrial Relations, University of California at Berkeley.

Palme, J. (1989) *Models of Pensions and Income Inequality: A Comparative Analysis,* Luxembourg Income Study Working Paper No. 37, Luxembourg: CEPS/INSTEAD.

Palme, J. (1990) *Pension Rights in Welfare Capitalism: The Development of Old-Age Pensions in 18 OECD Countries 1930-1985,* Stockholm: Swedish Institute for Social Research.

Palmer, J.L., Smeeding, T. and Torrey, B. (eds) (1988) *The Vulnerable,* Washington D.C: The Urban Institute Press.

Pestieau, P. (1992) `The distribution of private pension benefits: how fair is it?' in Organisation for Economic Co-operation and Development, *Private Pensions and Public Policy,* Social Policy Studies No. 9, Paris: OECD.

Preston, S. (1984) `Children and the Elderly: Divergent Paths for America's Dependents?', *Demography,* 21, 4: 435-457.

Quinn, J. (1987) `The economic status of the elderly: beware of the mean', *Review of Income and Wealth,* 33, 1: 63-82.

Rainwater, L. (1990a) *Changing Inequality Structures in Europe: The Challenge to Social Science,* Luxembourg Income Study Working Paper No. 46, CEPS/INSTEAD, Luxembourg.

Rainwater, L. (1990b) `Inequalities in the Economic Well-being of Children and Adults in Ten Nations', in Smeeding, T. (ed) *Research on Economic Inequality,* Volume 2, Greenwich: JAI Press.

Rainwater, L. (1992) *The Poor in Comparative Perspective,* Paper prepared for the International Research Conference on Poverty and Distribution, Central Bureau of Statistics, Oslo, November 16-17.

Rainwater, L., Rein, M., and Schwartz (1986) *Income Packaging in the Welfare State: A Comparative Study of Family Income,* Oxford: Clarendon Press.

Reynolds, M. and Smolensky, E. (1977) *Public Expenditures, Taxes and the Distribution of Income: The USA, 1950, 1961, 1970,* New York: Academic Press.

Richardson, S. and Travers, P. (1989) *The Conceptual Inadequacies of Poverty Lines,* Working Paper 89-4, Adelaide: Economics Department, University of Adelaide.

Ringen, S. (1986) *Difference and Similarity: Two Studies in Comparative Income Distribution,* Stockholm: Swedish Institute for Social Research.

Ringen, S. (1987) *The Possibility of Politics,* Oxford: Clarendon Press.

Ringen, S. (1991) `Do welfare states come in types?' in Saunders, P. and Encel, D. (eds) *Social Policy in Australia: Options for the 1990s,* Reports and Proceedings No. 96, Sydney: Social Policy Research Centre, University of New South Wales.

Room, G., Lawson, R. and Laczko, F. (1989) "New poverty' in the European Community', *Policy and Politics,* 17, 2: 165-176.

Rowntree, B.S. (1901) *Poverty: A Study of Town Life,* London: Macmillan.

Rowntree, B.S. and Lavers, G.R. (1951) *Poverty and the Welfare State: A Third Social Survey of York dealing only with Economic Questions,* London: Longmans.

Rozenkier, A. (1989) `The role of the social security system in providing social protection to the very old in France', *International Social Security Review,* 2: 164-177.

Sandefur, G.D. (1990) *Minority Participation in Social Welfare and Income Transfer Programs,* Institute for Research on Poverty Discussion Paper No. 918, University of Wisconsin-Madison.

Saunders, P. (1992) *Recent Trends in the Size and Growth of Government in OECD Countries,* Discussion Paper No. 34, Sydney: Social Policy Research Centre, University of New South Wales.

Saunders, P. (1994) *Welfare and Inequality: National and International Perspectives on the Australian Welfare State,* Cambridge: Cambridge University Press.

Saunders, P. (forthcoming) 'LIS Noncash Study: Country Report for Australia', in Smeeding, T. (ed) *The Distribution of Cash and Noncash Income in Seven Countries,* Luxembourg: CEPS/INSTEAD.

Saunders, P. and Klau, F. (1985) *The Role of the Public Sector,* OECD Economic Studies, No. 4, Paris: OECD.

Sawyer, M. (1976) `Income Distribution in OECD Countries', *OECD Economic Outlook - Occasional Studies,* Paris: OECD.

Shanas, E., Townsend, P., Wedderburn, D., Friis, H., Milhoj, P. and Stehouwer, J. (1968) *Old People in Three Industrial Societies,* London: Routledge and Kegan Paul.

Shepherd, W. F and Prasada Rao, D.S. (1989) *Trends in Average Earnings of Production Workers in the Manufacturing Sector in Australia and OECD Member Countries, 1979-1987,* Paper prepared for the 21st General Conference of the International Association for Research in Income and Wealth, August.

Sinfield, A. (1993) `Reverse Targeting and Upside-down Benefits - How Perverse Policies Perpetuate Poverty', in Sinfield, A. (ed) *Poverty, Inequality and Justice,* New Waverley Papers No. 6, Edinburgh: University of Edinburgh.

Smeeding, T. (1984) *Non-money Income and the Elderly: The Case of the `Tweeners,* Institute for Research on Poverty, Discussion Paper No. 759, University of Wisconsin-Madison.

Smeeding, T. (1985) *Full Income Estimates of the Relative Well-Being of the Elderly and the Nonelderly,* Institute for Research on Poverty, Discussion Paper No. 779, University of Wisconsin-Madison.

Smeeding, T. (1988) *Generations and the Distribution of Well-Being and Poverty: Cross National Evidence for Europe, Scandinavia and the Colonies,* Luxembourg Income Study Working Paper No. 24, Luxembourg: CEPS/INSTEAD.

Smeeding, T. (1990) `Use of LIS data for poverty analysis: An overview of lessons learned and still being learned' in Teekens, R. and Van Praag, B. (eds) *Analysing Poverty in the European Community,* Luxembourg: Eurostat.

Smeeding, T. (1991) *U.S. Poverty and Income Security Policy in a Cross National Perspective,* Luxembourg Income Study Working Paper No. 70, Luxembourg: CEPS/INSTEAD.

Smeeding, T., Hauser, R., Rainwater, L. Rein, M. and Schaber, G. (1985) *Poverty in Major Industrialised Countries,* Luxembourg Income Study Working Paper No. 2, Luxembourg: CEPS/INSTEAD.

Smeeding, T., O'Higgins, M. and Rainwater, L. (eds) (1990) Poverty, *Inequality and Income Distribution in Comparative Perspective,* Hemel Hempstead: Harvester Wheatsheaf.

Smeeding, T., Saunders, P., Coder, J., Jenkins, S., Fritzell, J., Hagenaars, A., Hauser, R., and Wolfson, M. (1992) *Noncash Income, Living Standards, and Inequality: Evidence from the Luxembourg Income Study,* Luxembourg Income Study Working Paper, Luxembourg: CEPS/INSTEAD.

Smeeding, T., Saunders, P., Coder, J., Jenkins, S., Fritzell, J., Hagenaars, A., Hauser, R., and Wolfson, M. (forthcoming) *The Distribution of Cash and Noncash Income in Seven Countries,* Luxembourg: CEPS/INSTEAD.

Smeeding, T., Torrey, B. and Rein, M. (1987) *Economic Status of the Young and the Old in Six Countries,* Luxembourg Income Study Working Paper No. 8, Luxembourg: CEPS/INSTEAD.

Smeeding, T.M., Torrey, B.B. and Rainwater, L. (1993) *Going to extremes: An international perspective on the economic status of the US aged,* Luxembourg Income Study Working Paper No. 87, Luxembourg: CEPS/INSTEAD.

Stewart, I. (1991) `Estimates of the Distribution of Personal Wealth II: Marketable Wealth and Pension Rights of Individuals 1976 to 1989', *Economic Trends, 457.*

Taylor-Gooby, P. (1991) `Welfare State Regimes and Welfare Citizenship', *Journal of European Social Policy, 1,* 2: 93-105.

Teekens, R. and Van Praag, B. (eds) (1990) *Analysing Poverty in the European Community,* Luxembourg: Eurostat.

Teekens, R. and Zaidi, A. (1990) `Relative and Absolute Poverty in the European Community', in Teekens, R. and Van Praag, B. (eds) *Analysing Poverty in the European Community,* Luxembourg: Eurostat.

Thompson, D. (1986) The Overpaid Elderly?', *New Society,* 7 March, 3-4.

Thompson, D. (1989) `The Welfare State and Generational Conflict: Winners and Losers', in Johnson, P., Conrad, C. and Thompson, D. (eds) *Workers versus Pensioners: Intergenerational Justice in an Ageing World,* Manchester: Manchester University Press.

Titmuss, R. M. (1958) `The Social Division of Welfare: Some Reflections on the Search for Equity', *in Essays on the Welfare State,* London: George Allen and Unwin.

Townsend, P. (1979) *Poverty in the United Kingdom,* Harmondsworth: Penguin.

Townsend, P. (1981) `The Structured Dependency of the Elderly: Creation of Social Policy in the Twentieth Century', *Ageing and Society,* 1, 1: 5-28.

Townsend, P. (1991) *The Poor are Poorer: A Statistical Report on Changes in the Living Standards of Rich and Poor in the United Kingdom 1979-1989,* Bristol: Statistical Monitoring Unit, Department of Social Policy and Social Planning, University of Bristol.

Townsend, P. (1993) *The International Analysis of Poverty,* Hemel Hempstead: Harvester Wheatsheaf.

Tracy M.B. (1988) `Equal treatment and pension systems: a comparative study', in International Social Security Association, *Equal Treatment in Social Security,* Studies and Research No. 27, Geneva.

Travers, P. and Richardson, S. (1993) *Living Decently,* Melbourne: Oxford University Press.

Turner, B. (1990) `Housing Finance in the Nordic Countries', *Urban Studies, 5, 3:* 168-183.

UNESCO (various years) *Statistical Yearbook,* Paris: UNESCO.

United States, Bureau of the Census (1987) *Estimates of Poverty including the Value of Noncash Benefits, 1986,* Technical Paper 57, Washington D.C.: Department of Commerce.

United States, Bureau of the Census (1992) *Measuring the Effect of Benefits and Taxes on Income and Poverty,* Current Population Reports Series P-60, No. 182-RD, Washington D.C.: Department of Commerce.

United States, Bureau of the Census (various years) *Statistical Abstract of the United States,* Washington D.C.: Department of Commerce.

United States, Social Security Administration (various years) *Social Security Bulletin, Annual Statistical Supplement,* Washington D.C.: U.S. Department of Health and Human Services.

Uusitalo, H. (1984) `Comparative research on the determinants of the welfare state: the state of the art', *European Journal of Political Research,* 12, 403 /122.

Van Doorslaer, E., Wagstaff, A. and Rutten, F. (eds) (1993) *Equity in the Finance and Delivery of Health Care: An International Perspective,* Oxford: Oxford University Press.

Van Praag , B., Hagenaars, A. and van Weeren, J. (1982) `Poverty in Europe', *The Review of Income and Wealth, 28:* 345-359.

Varley, R. (1986) *The Government Household Transfer Data Base, 1960-1984,* Department of Economics and Statistics Working Papers, Paris: OECD.

Veit-Wilson, J. H. (1992) `Confusion between goals and methods in the construction and use of poverty lines', Paper presented to the Multidisciplinary Research Conference on *Poverty and Distribution,* Oslo, November.

Walker, A. (1981) `Towards a Political Economy of Old Age', *Ageing and Society,* 1, 1: 73-92.

Walker, A. (1987) The poor relation: poverty among older women', in Glendinning, C. and Millar, J. (eds) *Women and Poverty in Britain,* Brighton: Wheatsheaf Books.

Walker, A. (1992) `Pensions and the living standards of pensioners in the EC', in *The Coming of Age in Europe: Older People in the European Community,* London: Age Concern.

Walker, R. Lawson, R. and Townsend, P. (eds) (1984) *Responses to Poverty: Lessons from Europe,* London: Heinemann Educational Books.

Walker, R. and Hutton, S. (1988) `The costs of ageing and retirement', in Walker, R. and Parker, G. (eds) *Money Matters: Income, Wealth and Financial Welfare,* London: Sage Publications.

Walker, R. and Parker, G. (eds) (1988) *Money Matters: Income, Wealth and Financial Welfare,* London: Sage Publications.

Weir, J. (1993) *Sensitivity Testing in HBAL An Examination of the Results,* Analytical Notes No. I, London: Analytical Services Division, Department of Social Security.

Whiteford, P. (1985) *A Family's Needs: Equivalence Scales, Poverty, and Social Security,* Research Paper No. 27, Canberra: Department of Social Security.

Whiteford, P. (1991) *The Costs of Sole Parenthood,* Reports and Proceedings No 95, Sydney: Social Policy Research Centre, University of New South Wales.

Whiteford, P. (1993) `The Concept of Income in International Comparative Research', Paper for the *Conference on Comparative Research on Welfare States in Transition,* International Sociological Association RC 19, University of Oxford, September.

Whiteford, P. and Kennedy, S. (1993) *The incomes and living standards of the elderly in a comparative perspective: literature review,* Working Paper DSS 1050, York: Social Policy Research Unit, University of York.

Wilensky, H.L. (1975) *The Welfare State and Equality: Structural and Ideological Roots of Public Expenditure,* Berkeley: University of California Press.

Wolfe, B and Moffitt, R. (1990) *A New Index to Value In-Kind Benefits,* Institute for Research on Poverty, Discussion Paper No. 913, University of Wisconsin-Madison.

Wolff, E. (1985) *Social Security, Pensions, and the Wealth Holdings of the Poor,* Institute for Research on Poverty, Discussion Paper No. 799, University of Wisconsin-Madison.

Wolff, E. (1992) `Methodological Issues in the Estimation of Retirement Wealth', in Slottje, D.J. (ed) *Research on Economic Inequality, Volume 2,* Greenwich: JAI Press.

Wolfson, M. (1987) `Lifetime Coverage: The Adequacy of Canada's Retirement Income System', in Wolff, E. (ed) *Distribution of Household Wealth,* Oxford: Clarendon Press.

Woodbury, S. (1990) `Economic issues in employee benefits', in Bassi, L. and Crawford, D. (eds) *Research in Labour Economics, Volume 11,* Greenwich: JAI Press.

Yates, J. (1991) *Australia's Owner-Occupied Housing Wealth and its Impact on Income Distribution,* Reports and Proceedings No. 92, Sydney: Social Policy Research Centre, University of New South Wales.

Yates, J. and Flood, J. (1987) `Housing Subsidies and Income Distribution', *Housing Studies,* 4, *3:* 193-210.

INCOMES AND LIVING STANDARDS OF OLDER PEOPLE A COMPARATIVE ANALYSIS

APPENDICES

Appendix 1 The 'Households Be Average Income' Approach

In this study we have attempted to replicate as closely as possible the methodology used by the Department of Social Security in its *Households Below Average Income* (HBAI) series (Department of Social Security, 1990a; 1992a; 1993a; 1994a). The relative merits of the HBAI approach have been discussed at length elsewhere (Low Pay Review, 1988; Nolan, 1989; Johnson and Webb, 1989; Townsend, 1991; Giles and Webb, 1993). We do not therefore propose to repeat the arguments for and against the HBAI methodology.

This appendix provides an overview of the salient features of the HBAI approach. The topics covered include the unit of analysis, the unit of categorisation, and the income-sharing unit. In addition, we discuss the weighting/grossing-up procedures employed, and the equivalence scales used. We then describe the income concept used and the treatment of housing costs. Finally, we outline the `standard' analyses presented in the HBAI reports.

The appendix provides only a brief description of the HBAI methodology. For a more thorough explanation of the methods, the reader is referred to Department of Social Security (1991b, 1994); Weir (1993), and Harris and Davies (1994).

The unit of analysis

In the HBAI series, the *individual is* the unit of analysis. In other words, all persons, regardless of age, count as individuals in the analyses.

The use of individuals as the unit of analysis is attractive from a number of perspectives. This is because this approach gives equal weight to all individuals, both adults and children. If the unit of analysis were the household, say, then implicitly the low income of a household of one person would be given the same weight as, for example, the low income of a household of six persons. The effects of this on estimates of the extent of low income will depend upon the incidence of low incomes in different household types in different countries. For example, if the extent of relative low incomes is greater in households of one person than in larger households, then the use of the household as the unit of analysis will yield higher estimates of the extent of low incomes among the population as a whole, compared to an analysis based upon individuals. If the prevalence of relative low incomes is greater among large households than among smaller households, then the reverse will be the case. Employing the individual as the unit of analysis may therefore be particularly appropriate in comparative analyses, since it overcomes any bias which may be introduced by differences in the family circumstances of low income populations in different countries.

The unit of categorisation

While HBAI uses the individual as the unit of analysis, the circumstances of persons are described by reference to the *benefit unit* to which they belong. The benefit unit corresponds to the nuclear or immediate family, or the unit of eligibility for Income Support/Supplementary Benefit, the social assistance scheme in the United Kingdom.

In the HBAI approach, a benefit unit is defined as a 'single adult or couple, together with any dependent children' (Department of Social Security, 1994a). In the published analyses, results are reported for six benefit unit types: single

pensioners, pensioner couples, couples with children, couples [illegible] single person [illegible] children. Dependent children are defined as persons aged [illegible] teen, or unemployed or non-advanced full-time education [illegible] teen to eighteen year-olds in [illegible] on.

In addition to the above family type categories, results are also shown for individuals classified by the economic status of the benefit unit to which they belong. In other words, individuals are classified according to both the type of benefit unit and the number of full-time workers, whether the head or spouse is aged sixty or over, and whether the head or spouse is unemployed. Separate results for children are also reported, [illegible] taken down by the number of full-time workers and the number of children in the

The **income-sharing unit**

A [illegible] unit type in HBAI. the assumption to [illegible] is one person living alone or a group [illegible] living at the same address [illegible] meals prepared together and with common housekeeping arrangements (Department of Social Security, 1992a, p.111). As noted in the HBAI report, household may consist of more than one benefit unit.

In many other comparative studies the income-[illegible] is taken as the family. Of twelve previous studies using LIS data and [illegible] ating poverty rates among older people in the United Kingdom, eight used [illegible] as the unit, and two used the household, and two did not state [illegible] 1993, p.13). Choosing the household as the [illegible] persons living with their adult children, for example, is assumed to [illegible] joint consumption and share to some extent in their income. In general [illegible] mean that estimates of the extent of [illegible] low income will be lower [illegible] assumed income-sharing unit was the family or benefit unit.

The result depends, however, on the income level of the other persons in the household. If a low income single person shares a household with other people who are well-off, then it is possible that the single person will be raised above the low income threshold. If a low income single person shares [illegible] other relatively low income persons, then it is possible that all household members may [illegible] below the low income threshold. It should be noted that the equivalence scale [illegible] in the HPAI analysis assume that 'additional adults' have lower relative needs than a household head, but higher relative needs than a spouse (see the discussion of equivalence scales below).

Weighting/grossing-up procedures

The *Family Expenditure Survey* (FES), upon which the HPAI series is based, covers the entire United Kingdom private household sector. However, certain groups are under - or over-represented in the FES, and to correct for [illegible] differential grossing-up weights for various benefit unit types are applied [illegible] tape. The control totals which form the basis [illegible] these grossing factors [illegible] from mid-year estimates of the resident [illegible] sex and [illegible] provided by the Office of Population Censuses and [illegible] (OFCS), the Department of Social Security [illegible] data [illegible] register of Child [illegible] used to provide more detailed [illegible] estimates of the number [illegible] children. Since [illegible] covers only private households, data from the Census is used to reduce estimates to the non-institutional population only.

In addition to these [illegible] data from the Inland Revenue's Survey of Personal Incomes (SPI) is [illegible] to compensate for the uneven representation of `very rich' households in the I

Equivalence scales

All the results in this report are expressed in terms of `equivalent income'. Equivalent income is income adjusted to take account of the relative needs of the members of the household sharing that income. For example, it is generally accepted that a single person does not need as great an income as a couple to be equally well-off. and that the presence of children in a household imposes extra costs, but that these additional costs may not be as great for children as for additional adults. Equivalent income is actual income divided by an `equivalence scale', which is a measure of the relative needs of households differing in size and composition. There are a wide range of estimates of equivalence scales (Whiteford, 1985) and no one approach or result is universally accepted.

The equivalence scales used in the HBAI are shown in Appendix Table 1.1, and are compared with the LIS and OECD scales commonly used in previous analysis of the LIS data, as well as with the scales implicit in the then system of Supplementary Benefit in the United Kingdom in 1986. The equivalence scales used by HBAI were developed by McClements (1977) and have been the subject of a range of criticisms (Muellbauer, 1979; Bardsley and McCrae, 1982; Townsend, 1991, 1993). While these criticisms are quite severe, the HBAI report has noted that `all the methods for deriving equivalence scales. . .. have weaknesses of one form or another. As a result. there is no consensus on the best method for estimating scales and no single set of scale values commands general acceptance' (DSS, 1992a, p.126). The HBAI report continues to use the McClements equivalence scales on the basis that there is no other generally accepted set of scales and the McClements scales are not extreme when compared with other scales. However, the HBAI report now provides sensitivity testing, by producing results on the basis of alternative equivalence scales. This approach is also adopted for the analysis of cash incomes in this report - that is, most results are presented after adjusting by the McClements equivalence scales, but the tables indicate which results are sensitive to the choice of equivalence scale. Appendix Four contains a detailed discussion of the testing of the sensitivity of the estimates.

Appendix Table 1.1 shows that the HBAI scales are somewhat more complex than other scales used previously on LIS data. In particular, the HBAI scales provide different allowances for the costs of children depending on their age, and they also allow for greater variation in the relative needs of additional adults. The HBAI scales for adults are most similar to the OECD scales; the HBAI scales for children are generally much lower than either the OECD or LIS scales.

Appendix Table I.I: **Comparison of equivalence scales (couple without children = 1.00)**

Household member	*HBAI scales* Before **housing costs**	After **housing costs**	**OECD scale**	L **S scale**	SB rates **(1986)**
First adult (head)	0.61	0.55	0.59	0.67	0.625
Spouse of head	0.39	0.45	0.41	0.33	0.375
Other second adult	0.46	0.45	0.41	0.33	(0.50)
Third adult	0.42	0.45	0.41	0.33	(0.50)
Subsequent adults	0.36	0.40	0.41	0.33	(0.50)
Each dependent aged:					
0 - 1	0.09	0.07	0.29	0.33	0.17
2-4	0.18	0.18	0.29	0.33	0.17
5-7	0.21	0.21	0.29	0.33	0.17
8 - 10	0.23	0.23	0.29	0.33	0.17
11 - 12	0.25	0.26	0.29	0.33	0.25
13 - 15	0.27	0.28	0.29	0.33	0.25
16 or over	0.36	0.38	0.29	0.33	0.38 - 0.50

Source: Department of Social Security. 1992a; Smeeding, Torrey and Rein, 1987; Mitchell, 1991a; CPAG, 1986.

The use of the HBAI scales is likely to have a number of specific implications for an analysis of the relative incomes of older people. The sensitivity of estimates of the proportion of the population with low incomes to the choice of equivalence scales is much greater in countries where a significant proportion of some population sub-groups are dependent upon social assistance benefits for their main source of income, or where they are dependent on social insurance benefits that are flat-rate rather than earnings-related. In considering the circumstances of older people, it is the equiv< scale values for single persons and couples that are most important, since most older people live in one or other of these two household types. It can be seen that the HBAI scales imply that a single person needs 61 per cent of the income of a couple before housing costs and 55 per cent after housing costs to be as well-off as a couple. But the supplementary benefit system at the time paid a single older person 62.5 per cent of the benefit paid to a couple. This means that it is likely, all other things being equal, that single older people with no income apart from supplementary benefit will be estimated to be somewhat better off than older couples receiving supplementary benefit. If the OECD scales had been used, then this effect would be even more pronounced, but if the LIS scale had been used then couples receiving supplementary benefit would be estimated to be better-off than single older persons receiving supplementary benefit[5]. Thus, the choice of equivalence scales can have a significant impact on estimates of the relative circumstances of particular groups of older persons. These effects will differ between countries depending upon the nature of their social security systems.

The concept of income

In HBAI, the income measure used is current weekly net equivalised household income per person. In other words, `income' is the sum of *all* individual household members' incomes, adjusted for household size and composition using the equivalence scales described above.

Income includes earnings from employment and self-employment income (which may be negative), all social security benefits, income from occupational and private pensions, property income, certain private transfers (such as maintenance payments), and educational grants and scholarships. In addition, certain forms of *noncash* incomes are included, such as free school meals, free coal, and school milk. The income equivalent of these in-kind benefits is taken to be their cash value.

Net income is calculated by taking the sum of all incomes from the above sources, and subtracting income tax payments, national insurance and occupational pension scheme contributions, domestic rates/community charge, and Social Fund Repayments. For some households - in particular those with self-employed persons who have reported losses - income may be negative. In such cases, income is reset to zero. If negative incomes occur as a result of the subtraction of housing costs however (see below for a description of the treatment of housing costs in HBAI), no adjustment is made.

The treatment of housing costs

The HBAI publications also contain information on proportions below average income before and after paying housing costs. The HBAI publication argues that neither measure of income is to be preferred, but that each throws light on trends in living standards and they should be regarded as complementary (Department of Social Security, 1992a, pp.170-171). The need to take account of differences across

This effect can best be illustrated by the following example. Let us say that in 1986 a single person with no income apart from supplementary benefit received £62.50 for each £100 received by a couple in the same position. Equivalent income is actual income divided by the equivalence scale. If the SB scale rate is used then the equivalent income of a single person is £62.5010.625, which is equal to £100, and the single person is as equally well-off as the couple. If the HBAI scale is used, then equivalent income is £62.5010.61, which is £102.46. If the OECD scale is used, the equivalent income is £62.5010.59, which is £105.93. In these cases. the single person is better off than the couples. If the LIS scale is used, then equivalent income is £62.50/0.67. which is £93.28, and the couple is better off than the single person.

i t using to cannot be over-emphasised. both in the context of
of a- d comparisons across countries (Yates, 1991).

Tl ina.: for ded housing costs from income relates to the fact that
is in housing o~ Lay not accurately reflect variations in the *standard* of
G alth and Soci_I Security, 1988). Housing costs may
s be re ..d a to a t , a d as such should be
1988 [re]view of HBAI
h.-_air_ u s way a; es that there is no
between costs and the _ons. m value' of
housing. In reality, the actual situatic will be somewhere bt these two
extreme positions. In the HBAI repo)re, results are presenn d both before
and after housing costs.

The treatment of housing costs (and local I º ; "~-tt taxes) .Al has received
e~ iderable attention from Department of Soc`tl Security analy .l (Department of
Security. 1991b: Harris and Davies, 1994). In the latter report, various
ds of taking account of housing costs are reviewed, using a number of
including the `fairness' of comparisons of living standards both over time
a -d oc ween different groups at a point in time, the availability and reliability of
data, and the implications for the conti- of [s]reasurement given the possibility
of major changes to the tax-benefit *systP,--.* It - .eluded that the use of both before
and after housing costs measures sin to be used in HBAI, but that
certain before bon- [N] g costs measures to others. The reader is
ed to Har s -vies (1994) for an in-clef` inalysis of these issues, and to
--id Web (1992) for an independent evaluation of the HBAI treatment of
its.

The results reported in HBAI

In the published HBAI reports. the results presented are of four main types:

- Analyses growth in incomes and the change in income shares since
  1979. by -oup;
- Analyses of he composition of different deciles in the income distribution:
- Analyses of persons with incomes below set percentages (40. 50. 60, 70, 80,
  and 100 per cent) of the contemporary average household income: and
- Analyses of those below income thresholds held constant in real terms.

For these analyses, the results are presented for persons categorised by the benefit unit types outlined above in this Appendix. For the final three types, separate results are also presented for dependent children.

In adi' ion to the 'stndard' results outlined above, the HBAI reports also contain
i rr."c; a patterns of ownf of consumer durables, and results
shoe of receipt of ir fated social security benefits. Separate
appendices elude analyses c distributions based upon income and
expenditure contrasting the __..ned by substituting the benefit unit
for the as the income g . Results are also presented showing
the chat income distributions by benefit snit type since 1979.

The [illegible] proportions fractio o cc `_: [c_C] a--erage
income [illegible] received the urea_s__.ttentior outs'dc e tors.
Target [illegible] some is sed as a .~tive lot cc e + esa~.ld
(see, for example, Miller, 1991).

There h; erable ssion of th[e] ages and disadvantages of the
HBAI ti- framew~_- r assessing ex ent of relative low incomes in
the U partic -ly in compari, with the previous series of low
income s' Low Pay Review, 1988; Nolan, 1989; Johnson and Webb, 1989;

Townsend. 199F Giles and Webb, 1993). There is no doubt, however, that for the purposes of making international comparisons .the HBAI approach to analysis is to be preferred to that of the low income statistics. This is because the low income statistics show the proportion of persons with incomes on, below or just above the level of social assistance in the UK. Since the social assistance and social insurance systems of other countries differ markedly from those of the United Kingdom. this approach would not necessarily be meaningful.

The HBAI approach is particularly suitable for international comparisons, and is conceptually similar to the methods used in previous studies of the LIS data. Analysis of the proportions below different percentages of average equivalent income is the standard approach used in earlier research (for example, Buhmann *et al.,* 1988). As noted by Nolan (1989) this approach explicitly acknowledges the diversity of views about how poverty should be measured and where the poverty line is to be drawn, as advocated by Atkinson (1987) and Foster and Shorrocks (1988).

Virtually all previous LIS studies have estimated low income on a relative basis, being defined as some proportion (40, 50 or 60 per cent) of adjusted *median* income for the population as a whole. In contrast, the HBAI definition of relative low income is based on proportions of *mean* income for the population as a whole. The Department of Social Security (1992a, p.142) has noted that the median incomes of the lowest and highest decile groups are more reliable measures than the mean incomes of deciles, because of the effects of extreme outliers, but this consideration is not as relevant to the population mean, which is used for the results in this report. One implication of choosing the mean rather than the median is that estimates of the proportion of the population below average income will be higher in all countries. This is because mean income is higher than median income, so that 50 per cent of the mean will be higher than 50 per cent of the median. As a consequence, the proportion of the population below fractions of the mean must be higher than proportions below corresponding fractions of the median.

end ix 2 The Luxembourg Income Study Datasets

This appendix provides an overview of the datasets included in the Luxembourg Income Study (LIS) database. The material presented here is based upon the considerable body of documentation available to LIS users as a result of the LIS Technical Database (TDB) project (de Tombeur *et al.,* 1993). The TDB project was funded by the Statistical Office of the European Community (SOEC), and the database is available to all LIS users on computer diskette. Copies can be obtained on application to Tim Smeeding, the Director of LIS.

General overview

The LIS database currently includes over forty-five datasets (Summer 1993). The datasets are held at the Centre for Population, Poverty and Policy Studies (CEPSIINSTEAD) at Walferdange, Luxembourg. At present, access to the database is free for researchers from LIS member countries, subject to certain limitations imposed in order to meet the data protection requirements of some LIS member countries. The datasets are accessed using electronic mail via the European Academic Research Network (EARN). Researchers submit pre-prepared SPSSX command files to LIS, which are then processed automatically by the computers in Luxembourg. The results are then sent back automatically via EARN to the remote sites.

The organisation of the database presents a number of limitations which are not faced by researchers using conventional arrangements for data analysis. The system does not allow direct access to the microdata, and security procedures prevent the copying or listing of individual or household level data. Since microdata cannot be saved for further analysis, data runs must specify all the data transformations and procedures required for the analysis. As a result, command files may be exceedingly long and complex, especially if the analysis requires considerable manipulation of the 'raw' data. The basic programs used in this study to transform the LIS data to allow an HBAI type analysis, for example, average over a thousand lines of SPSSX commands.

The arrangements for accessing the datasets can also present problems for the researcher. The time delay between submitting command files and receiving results can vary from between a few minutes to several days, depending upon the demands upon the computers in Luxembourg and the degree of congestion on EARN. This can be especially frustrating when the analysis being attempted involves an iterative procedure. In general, however, delays are rarely greater than two days.

The LIS datasets

Appendix Table 2.1 lists the datasets included in the analyses presented in Volume One of this report. together with information on the primary purpose for which the data was originally collected. In the second column 'year' refers to the period for which the income data was actually collected. The surveys range from 1984 in France and Germany to 1987 in the Netherlands, Canada and Sweden, with the other countries falling between.

The fact that the reference year varies between countries may have a bearing upon the results presented in this report. In particular, the countries concerned were at different stages in the economic cycle at the time of the surveys. It is not possible, however, to ascertain what impact this has upon the validity of the results

presented in this report. It should be noted, however, that even if the data for each country referred to the same year, comparisons might still not be considered entirely valid since different countries may be at different cyclical stages at the same point in time (see Chapter Four),

The datasets included in the LIS c_ have been transformed from the original microdata us a stand:.~d I. , or example, that a sir of one of the surve\ which .he LIS & at we dewed ws or. ..n aken with the requit, of con°. arative researchers in mind. As `ix 1 ~.hie 2.1 indicates, the :ys were originally undertaken for a variety of purposes. One corollary of this is that no two datasets are exactly comparable. In the remainder of this Appendix, therefore, we compare certain aspects of the datasets used and assess their degree of comparability. We examine population coverage, dataset size and the presence or otherwise of survey weights, and the income unit used. We do not provide a comprehensive comparison of the sampling methods used in the surveys. Detailed information pertaining to the sample design used in each survey is available in the LIS Technical Database (TDB). Nor do we discuss the quality of the data. This is for two reasons. First, not all the countries have carried out systematic appraisals of their surveys. Second, to review and compare the quality of the surveys would be an extremely large research project in its own right. Interested readers are referred to the TDB for a more comprehensive treatment of these and other issues.

Appendix Table 2.1: Datasets **included in the analysis**

Country	Year	Name	Primary purpose
United Kingdom	1986	Family Expenditure Survey	Provide information on spending patterns for the Retail Prices Index.
Belgium	1985	Panel Study of the Centre for Social Policy	
France	1984	Survey of Income from Income Tax	Measurement of household income distribution.
West Germany	1984/85	German Socio-Economic Panel Survey	Provide information on the dynamics of individual welfare, and to evaluate the impact of social policy.
Italy	1986	Bank of Italy Income Survey	Provide information on economic behaviour.
Luxembourg	1985	Household Panel Survey	To measure unemployment, poverty, labour force participation, income, and expenditure.
Netherlands	1987	Additional Enquiry on the Use of Public Services	To measure income, household composition, and the use of public services.
Australia	1985/86	Income Distribution Survey	To measure personal and household income distribution.
Canada	1987	Survey of Consumer Finances	To measure the composition and distribution of income.
Sweden	1987	Income Distribution Survey	To measure income distributio
United States	1986	Current Population Survey	To provide estimates of employment, unemployment, and other characteristics of the labour force.

Source: LIS Technical Database

Population coverage

Appendix Table 2.2 indicates the population coverage implied by the sampling frames used in each country. No information is available for Belgium, since it has not yet been included in the LIS Technical Database. Since the surveys are primarily household-based, the populations covered generally exclude such groups as the homeless and the institutionalised. In addition, two of the countries exclude certain geographical areas. France excludes certain overseas Departments, and

Canada excludes native American Reserves, as well as the Yukon and the Northwest Territories.

Despite these differences in the populations covered, the proportion of the total population covered by the surveys exhibits little variation between the countries. The population covered as a percentage of the total national population varies from 96.0 per cent in Germany to 98.3 per cent in the Netherlands.

Dataset characteristics

Appendix Table 2.3 indicates the size of the datasets. and the presence or otherwise of survey weights. It can be seen that the size of the datasets varies from just over 2000 households in Luxembourg to almost 13,000 households in France. The relatively small number of households in the Luxembourg and Netherlands datasets suggests that results for some small sub-groups in these countries should be treated with caution. Given the variety of sampling methods employed in the different surveys and the complexity of the computations required, we have not attempted to estimate sampling errors. It is therefore important to bear in mind that certain results may be more susceptible than others to sampling error.

For all the countries included in the analysis, with the exception of the United Kingdom, survey weights are included in the datasets. Various weighting procedures have been employed in different surveys; to adjust for differing selection probabilities, under-representation of sub-groups in the survey, and so on. More information on the weighting procedures used in the surveys can be obtained from the detailed country sections in the LIS Technical Database.

Appendix Table 2.2: **Population coverage in the LIS Datasets**

Dataset	Population covered	Population coverage[1]
UK86	All private households	*96.5*
BE85		
FR84	French non-institutionalised population[e]	97.0
GE84185	German civilian population	96.0
IT86	Italian civilian non-institutionalised population	
LX85	Luxembourg social security contributors	97.0
NL87	Dutch civilian population	98.3
AS85/86	Australian non-institutionalised population	97.0
CN87	Canadian non-institutionalised population[2]	98.1
SW87	Swedish non-institutionalised population	98.1
US86	American non-institutionalised population	97.6

Notes: [1] As a per cent of the total national population.
[e] The non-metropolitan departments of Reunion, Martinique, Guadeloupe and Guyane are excluded from sample design.
[2] Native American Reserves, and the Yukon and Northwest Territories not included.

Source: LIS Technical Database

Appendix Table 2.3: Dataset characteristics

Dataset	Dataset size	Presence weights	Purpose of weights
UK86	7,178	No	
BE85	6.471	Yes	n.s.
FR84		Yes	To adjust sampling rates.
0E84/85	5.' 59	Yes	To ,1just for equal sampling probabilities built into the design.
IT86	8.022	Yes	To adjust for survey units that were selected but not interviewed.
LX85	2.012	Yes	To adjust for selection bias.
NL87	4,190	Yes	To adjust for the under- and over-representation of certain groups.
AS85/86	7,560	Yes	To adjust for the under-enumeration of certain groups.
CN87	10,999	Yes	To ensure representativeness of sample compared to independent population estimates.
SW87	9.530	Yes	To compensate for sampling errors resulting from the difference between the units used in the sampling frame and the analytic unit of the survey.
US86	11.614	Yes	To adjust for non-response and to ensure representativeness of sample.

Notes: n.s. not stated

Source: LIS Technical Database.

Income units

Appendix Table 2.4 provides information relating to the units for which data is available in each of the datasets. This table is derived from a number of tables in the LIS Technical Database, with supplementary information provided by the LIS Technical Director, John Coder. For most of the countries, the household is the primary unit for which data is collected. For others (for example Canada), data is collected in the first instance for families, but is subsequently aggregated in the case of 'multi-family' households to allow analyses to be performed using household-level data.

For two countries, however, household-level data is not available. In the case of Italy, unrelated individuals are not considered members of the same unit, even if they are sharing living arrangements with other household members. For Italy, therefore, the income unit used in the analyses corresponds to the LIS definition of a family; namely 'a group of persons living together who are related by blood, marriage, or adoption' (Smeeding, 1988). In Sweden, the income unit used is narrower still, corresponding more closely to the 'benefit unit' concept used in the United Kingdom. In the Swedish dataset, individuals other than the head and spouse/partner who are aged 18 or over are not considered members of the 'family' unit. This means, for example, that teenagers aged 18 or 19 who are living with their parents, or older people living with their adult children are treated as separate units in their own right.

The Italian and Swedish datasets are therefore based upon a narrower income unit than the United Kingdom. For Belgium, Luxembourg, Australia, and the Netherlands, however, household-level information is available and the definition of 7ousehold' corresponds closely to that adopted in the *Family Expenditure* Sic However. for France, Germany, Canada, and the United States, the d ticn of 'household' employed is somewhat broader than that applied in the United Kingdom. In these countries, *all* individuals living in a particular housing unit are considered members of the same household, regardless of whether they actua' ci mmon housekeeping arrangements.

Appendix Table 2.4: Survey $Units

Dataset	**Primary** collection unit[y]	Household level data available?	Definition **of household** or **unit used** in **analysis**
UK86	Household	Yes	One person living alone. or a group of people living at the sw:c address having meals prepared together and ith - ma-hi housekeeping.
	I 'd	Yes	~:.,; v:ho eat together and live from the same income
FR84	Household	Yes	All persons living in a particular housing unit.
GE84/85	Household	Yes	One person living alone, or a group of (related or unrelated) persons living together.
IT86	Family	No	All related persons living together in the same housing unit.
LX85	Household	Yes	Person sharing a housing unit and a common living space.
NL87	Household	Yes	Persons living and eating together.
AS85i86	Household	Yes	Persons in the same dwelling sharing eatin[g] facilities.
CN87	Family	Yes	Any person or group or persons living in a dwelling.
SW87	Household	No	One adult or two adults (more than 18 years old) with or without children (equal or less than 17 years old).
US86	Household	Yes	All persons who consider the housing unit their usual place of residence, plus individuals living in the housing unit who have no usual place of residence.

Notes: [a] The unit the survey was designed to measure.
Source: LIS Technical Database

It is difficult to assess the impact of these differences on the results obtained from the analyses. Studies based on narrower units are likely to produce higher estimates of the extent of relative low income compared to studies using broader income-sharing units (Whiteford and Kennedy, 1993; Johnson and Webb, 1989). However, given differences in the demographic and other structures between countries, it is difficult to predict how important the income unit is in affecting estimates in any one country. In the present context, however, it is probably not unrealistic to assume that the estimates of relative low income in Sweden are higher than would be the case if the broader household had been chosen as the income unit.

Appendix 3 Applying the AI Approach to LIS Data

Although the results presented in this report are based upon the methodology employed in the *Households Below Average Income* series, it should be remembered that the LIS datasets are not specifically designed for such analyses. A number of adjustments are necessary before an HBAI type analysis can be undertaken.

In this Appendix we describe four major adjustments made to the LIS data:

- First, we outline the approach used to yield persons as the unit of analysis.
- Second, the imputation of benefit unit type is described.
- ® Third, changes made to the LIS disposable income measure are outlined.
- Fourth, we conclude by discussing the estimation of equivalent income.

Using individuals as the unit of analysis

The second wave of LIS data (covering the period 1984-87) allows the user the option of choosing the `unit of analysis' (i.e. households, families, or individuals). If the latter option is chosen, each individual is treated as a separate case or observation and a number of person-specific variables are available in addition to those relating to household characteristics. Appendix Table 3.1 lists the demographic variables used in the analyses presented in Volume One and their availability across datasets. However, not all individuals are included as separate cases on the LIS datasets if the `person' option is chosen. Children under the age of 15 are excluded, as are adults after the fifth (in households where a spouse of the head is present) or fourth (where no spouse is present) [1]. In order to carry out an HBAI-type analysis, it is therefore necessary to add cases to the original datasets to ensure that *all* individuals are counted as separate cases.

Appendix Table 3.1: **Demographic variables used** in the analyses **and** their availability **across** datasets

Availability for country/year											
Variable	Description	UK 86	FR 84	GE 84	IT 86	I.% 85	NL 87	AS 85	CN 87	SW 87	US 86
PAGE	Person age										
PSEX	Person sex										
PREL	Person relationship to head										
PMART	Person marital status									X	
PLFS	Person labour force status										
PEDUC	Person level of education									X	
DI	Age of head										
D2	Age of spouse										
D3	Sex of head										
D4	Number of persons in household (unit)										
D27	Number of children under 18										
AGEAI, A2, AS	Age adult Al, A2, AS										
SEXA1, A2. A3	Sex adult Al. A2, AS										
RELAI, A2. AS	Relationships to head Al. A2, AS										
MARTAI, AS. AS	Marital status Al. A2, AS				X						
USA I, Al A3	Labour force status Al, Al A3										
EDUCA1. A2, AS	Level of education										
AGEC1, C2, C3	Age of child Cl, C2, C3						X	X			
RELCI, C2. C3	Relationship to head, child Cl, C2. C3						X	X			

x Variable not available

[1] These restrictions are imposed in order to limit the amount of memory taken up by the datasets.

Appendix Table 3.2: Additions to the original LIS datasets

Country	Total number of individuals covered by dataset*	Number listed as separate cases in original dataset	Number of children cases added for whom information available at the household level	Number of cases added for whom assumptions necessary about individual characteristics
UK86	18330	14309	3870	151
FR84	35852	27941	7532	379
GE84/85	14174	11282	2778	114
IT86	25068	20507	4327	234
LX85	6044	4992	952	101
NL87	10731	8287	---------- 2444 ----------	
AS85786	20440	15348	---------- 5092 ----------	
CN87	30739	23270	7117	352
SW87t	21589	16878	4639	72
US86	31093	23785	6843	465

Notes: * unweighted totals

I single persons aged 18 or over are considered separate units in the Swedish survey, regardless of whether they reside with their parents.

Source: LIS data files.

An indication of the importance of these additions is provided by Appendix Table 3.2. To explain the procedure adopted for adding cases to the original dataset, the United Kingdom will be used as an example. The variables referred to are those listed in Appendix Table 3.1.

From Appendix Table 3.2 it can be seen that the households included in the United Kingdom 1986 dataset contain a total of 18,330 individuals. However, if the 'person observation unit' option is chosen, the LIS dataset contains only 14,309 persons; 4,021 short of the survey total. The procedure for determining the characteristics of these 'missing' individuals and adding them as 'new' cases to the original dataset is as follows.

Using the household level variables relating to the head, spouse, and additional adults (Al, A2, and A3), the number of persons in the household who are already present on the dataset can be determined. We also know the total number of persons and the number of children under 18 years of age in the household from the variables D4 and D27 respectively. It is therefore possible to determine how many 'children' and 'adults', if any. are not present as separate cases in the dataset.

Individual information on up to three children is available at the household level (variables AGEC1, SEXC1, RELC1). Using this data, it is therefore possible to 'construct' cases for these children. In effect, data is copied from the household level to the individual level. and then added to the dataset to `create' an extra case. From Appendix Table 3.2, it can be seen that 3,870 'children' cases have been created in this way for the UK 1986 dataset.

Information on the three youngest children only is provided at the household level in the LIS datasets. In addition, if there are more than three 'additional adults' (adults other than the head and spouse), data is provided for the three oldest only. It is therefore necessary to make assumptions about the characteristics in certain cases where the household contains a large number of adults or children. Form Appendix Table 3.2, it can be seen that 151 persons fall into this category in the UK86 dataset.

It is however possible to estimate the age range for these additional persons using the household level variables D4 and D27, in conjunction with the data available on the ages of the three youngest children (AGEC1 etc.) and the three oldest adults (AGEA1 etc.). By looking at the ages of those included at the household level, it is possible to ascertain whether the 'missing' individual is a child under 15, a 15 to 17 year-old, or 18 or over. This data is useful for the purposes of estimating equivalent income (see below).

Although it is possible to ascertain the age range of these 'missing' individuals, it is not possible to glean any further information on their characteristics from the data. In particular, no information is available on their marital status or relationship to the household head. This information is useful in determining benefit unit type (see below). If the person is a child. we therefore assume that they are dependents of the head of the household (and consequently of the same benefit unit type). If the person is an adult (eighteen or over) we assume that he or she is not a member of a single older *or* older couple bene - :. t.

The procedure used above has bee. used for all countries *except* Australia and the Netherlands. For these countries, individual data on children is not available at the household level, so it is necessary to estimate the ages of all children (other than the youngest, whose age is known) in the household. This was done by looking at the average 'spacing' of children, by age of youngest child and number of children, in the United States and Canada datasets. The data derived from this was used, in conjunction with variable D28 (age of youngest child), to estimate the ages of all subsequent children using a probabilistic approach. With respect to benefit unit type, we assume that all children in these countries are dependents of the head of the household.

The imputation of benefit unit type to individuals

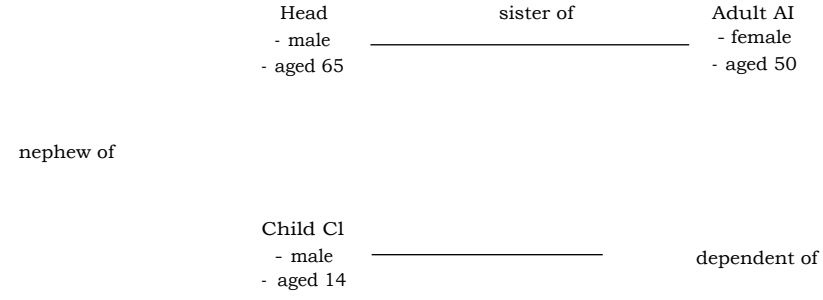
The standard HBAI approach categorises individuals according to their benefit unit type. This means that some households may contain more than one benefit unit. In order to identify the benefit unit type to which each individual belongs, a complex imputation procedure was employed. For heads and spouses it is relatively easy to determine benefit unit type, but the situation is more complicated for children and additional adults. The procedure adopted for additional adults and children involved not only considering the individual's characteristics (such as age, sex, marital status, relationship to head etc.) but also those of all others in the household. This is necessary since it may not be possible to identify an individual's benefit unit type by considering the characteristics of the individual alone.

The following two hypothetical examples may indicate more clearly the approach adopted.

Example I

Consider a household consisting of three persons —a single male head aged 65, his sister (aged 50) and her son (aged 14). This household can be represented diagrammatically in the following way (see Appendix Figure 3.1).

Appendix Figure 3.1: A hypothetical household



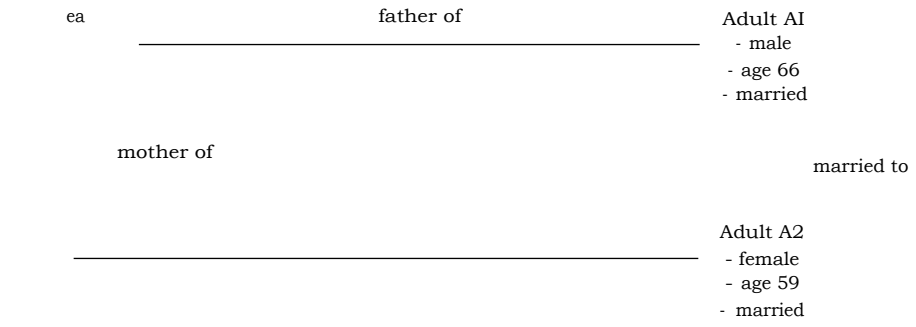
In order to correctly identify which benefit unit the child belongs to it is necessary to know not only the relationship of the child to the head of the household, but also the relationship and age of adult Al. An approach which only took into account the age and relationship of the child to the head of the household would wrongly categorise the child as a member of a 'single older' benefit unit. Moreover, adult Al would be labelled 'single non-older' rather than 'single with children'.

The approach adopted in this volume seeks to avoid these mistakes by taking account of the characteristics of other individuals in the household.

Example 2

Consider a household consisting of a single female head (aged 39) and her married parents (mother aged 59 and father aged 66). This is represented in Appendix Figure 3.2. In this example we assume that the father is the head of the benefit unit.

Appendix Figure 3.2: A hypothetical household



In the case of adult A2 (the mother), it is not possible to determine whether she is a member of an `older couple' benefit unit without also considering the relationship of adult Al to the head, age of adult A1, sex of adult A1, and marital status of Al.

The two examples above indicate the approach taken to impute benefit unit type to individuals. In the procedure, the relationship variables (PREL, RELA1 etc., RX1 etc) are particularly crucial in identifying which benefit unit each individual belongs to. The comprehensiveness of the information provided by these tables, however, differs from dataset to dataset (see Appendix Table 3.3). While information provided on relationships is quite detailed for some countries (e.g. Luxembourg) for others the relationship categories are broader or more vague (e.g. Italy). Given these differences between datasets, it was decided to categorise individuals according to only three benefit unit types —non-older, single older, and older couples—since these types are relatively easy to identify, and moreover, since these groups are the main focus for the present study.

As was noted in the previous section, assumptions regarding the relationship of additional adults and children may affect the benefit unit type imputation. In the case of adult cases added, the assumption that they do not belong to elderly benefit units may not be unrealistic, since at least three other additional adults in the household are older.

The assumption that children (after the fourth) are dependents of the head is potentially more problematic, however. It is possible that a small number of children are incorrectly categorised, but it is unlikely that any misclassification will have serious implications for the validity of the results. It was noted above that the NL87 and AS85 datasets do not contain information on the ages and relationship to the head for children under fifteen years of age. As a result, it is necessary to assume that all children are dependents of the head of the household. Again, this may result in the misclassification of some children with regard to benefit unit type.

Despite these potential problems it is likely the benefit unit type imputation process described results in a classification of individuals which provides a considerably more accurate picture of individual circumstances than do conventional procedures which classify all individuals according to overall household circumstances, or according to individual characteristics alone.

Appendix Table 3.3: **Value labels for relationship variables**

PREL, RELA1 etc RELC1 etc		*Variable value labels for country/year*									
		UK86	**FR84**	**GE84**	**IT86**	**LX85**	**NL87**	**AS85**	**CN87**	**SW87**	**US86**
Value	1	Head	Head	Head	Head	Head	Head	Head	Head	Head	Head
	2	Spouse	Spouse	Spouse	Spouse	Spouse	Spouse	Spouse	Spouse	Spouse	Spouse
	3	Son/daughter	Son/daughter		Child of head		Partner	Dependent child	Child of head/ other relative	Child	Child of head
	4	Son/daughter-in-law	Son/daughter-in-law	Child of head	Other household member	Child of head	Child	Dependent child	Other relative		Other relative of head
	5	Father/mother	Parent	Son/daughter-in-law		Brother/sister/ brother-in-law/ sister-in-law	Child of partner	Non dependent child	Unrelated to head		Non-relative of head
	6	Father/mother-in-law	Brother/sister	Father/mother of head/spouse		Mother/father/ mother-in-law/ father-in-law	Parent	Non dependent relative			
	7	Brother/sister	Friends of head	Other relative of head		Grandchild	Son/daughter-in-law	Non-relative			
	8	Grandson/grand daughter	Grandchild	Grandchild of head		Grandparent	Grandchild				
	9	Other relative	Missing	Non-relative of head		Niece/nephew	Other family				
	10	Non-relative				Uncle/aunt					
	11					Cousin					
	12					Other relative					
	13					Non-relative					

Changes to disposable income in the United Kingdom and Canada datasets

In Chapter Four of this report the need for a consistent definition of income in international comparisons was discussed at length. The LIS disposable income concept (see Table 4.1) is quite standard and conceptually similar to that employed in a number of countries. Nevertheless, closer inspection of the derived disposable income variable indicated that in some country datasets the definition of `disposable income' is not completely consistent with the LIS standard income concept. It was felt that in order to facilitate comparisons between the countries, adjustments were necessary to the income concept in the United Kingdom and Canada datasets.

In the case of the United Kingdom, the central problem relates to the treatment of contributions to occupational and private pension schemes. In the existing LIS income concept, these are deducted from gross income to give net disposable income. This approach is entirely consistent with the treatment of occupational pension contributions in HBAI. However, non-mandatory contributions of this kind are *not* deducted in any of the other country datasets. It was therefore decided to add occupational and private pension contributions to disposable income in the United Kingdom 1986 dataset to create a new definition of disposable income which is consistent with that used in the other datasets. Although this represents a departure from the HBAI methodology, it was thought that the comparability of income definitions across datasets was a more important consideration.

In the LIS United Kingdom 1986 dataset, it is not possible to identify occupational and private pension contributions separately from National Insurance contributions (NICs) for employees (for the self-employed and the non-employed, however, NICs are in a separate variable). We therefore decided to model NICs using the information on individuals' wages and salaries available in the dataset. We modelled NICs using the contribution schedules in place in 1985/86 and 1986/87, and data on the numbers of persons paying the various classes of contributions in 1986/87 from *Social Security Statistics* (DSS, 1992b). We take account of the fact that around 20 per cent of married women were still paying the married women's option in 1986/87 by reducing the contribution rate for a proportion of (eligible) women selected at random using a probabilistic approach. We were unable to identify those contracted out of SERPS, so we assume that all employees (other than those paying the married women's option) are paying full class 1 NICs. However, since contracting out *requires* contributions to be made to an occupational or private pension scheme at least equivalent to the additional amount payable by full class 1 contributors, it may not be regarded as unreasonable to make this assumption.

To construct our new disposable income variable, we modelled NICs for each individual using the approach described above. The NICs were than added up for all individual household members, and subtracted from gross income (along with income tax and NICs for the self-employed) to produce the new disposable income variable.

In the Canada 1987 dataset, income tax is deducted when calculating disposable income, but social insurance contributions are not. It was therefore necessary to model social insurance contributions for all workers. This was done using a model developed for use with LIS data by Bruce Bradbury of the Social Policy Research Centre in Sydney. The model was refined using additional information on eligibility and contribution schedules obtained from Health and Welfare Canada (1991).

Apart from the changes to the disposable income concept in the United Kingdom and Canada datasets, no other adjustments were made to disposable income in the countries included.

The calculation of equivalent income

The equivalence scale used in the analyses is the McClements scale {or variants thereof). As was stressed in Appendix One, the McClements scale is considerably more complex than alternative equivalence scales employed in previous studies using LIS data. In order to calculate equivalent income for a household, it is necessary to know not only the number but also the ages of all children. As was outlined in the discussion above, information on up to three children is available at the household level, but where there are more than three children assumptions are necessary with respect to the fourth and subsequent children'[7]. Fourth and subsequent children are given an `equivalence factor' of 0.26, which is the average of the values given for children aged 11-12 and 13-15. Those identified as being between 15 and 17 are given the same value as persons of 16 or over.

The situation is more problematic in the case of Australia and the Netherlands, where no infolmation on the ages of individual children is available. For these countries, each child is given an equivalence factor of 0.22, which is the average for children under the McClements scale.

[17] Where a `child' is defined as an individual under 15 years of age.

Appendix 4 Sensitivity Analysis

Previous research using the LIS database has found that estimates of the proportion of the population with incomes below some poverty line tend to be sensitive to the choice of equivalence scales (Buhmann *et al.,* 1988). The results of HBAI analysis in the United Kingdom are also sensitive to the choice of equivalence scales (Coulter, Cowell and Jenkins, 1992), and the HBAI publications now indicate which results are particularly sensitive to differences in the choice of equivalence scales. As a consequence, this section of the report provides the results of an analysis of the sensitivity of selected results to the use of a range of different scales.

Appendix Table 4.1 shows the scales used. The scales labelled `A' are the standard McClements ratios used throughout the report. Three other variants have been selected; these are taken (with some modifications) from scales used in the HBAI sensitivity testing. Previous research suggests that the two crucial choices to be made in assessing the effects of alternative equivalence scales relate to the ratio between single people and couples and the estimated costs of children (Whiteford, 1991). The scales marked B' are therefore identical to the basic McClements scales for adults, but allow for higher costs of children - for each age the allowance under scales are about one-third higher than under the basic scales. Increasing the allowance for the costs of children is unlikely to directly affect the needs of older persons, since few older people share households with dependent children. The effect of increasing the allowance for children is likely to be indirect; by increasing the relative needs of families with children, the needs of smaller households without children will fall. As a consequence it could be expected that families with children will become more common among the lower income population, and families without children - including older people - will be measured as being somewhat better-off.

The remaining two variants have been chosen to have the maximum direct impact on estimates of the extent of low income among the older population in the United Kingdom. Basically, variant `C' suggests that single older people require only 55 per cent of the income of a couple to be equally well-off. This assumption will tend to improve the relative circumstances of single older people since the social security system in the UK actually provides for a higher relativity than this. Variant `D' implies that a single person requires 75 per cent of the income of a couple to be equally well-off. This assumption will tend to make single older people appear more likely to have relatively low incomes, since this relativity is higher than that provided through social security pensions or income support.

Thus, option `C' is likely to make single older people appear better-off than under the standard HBAI analysis, and option is likely to make them appear worse-off. All other things being equal, a variant that makes single older people appear worse off will tend to make older couples appear relatively better-off, and vice versa. It would have been possible to choose alternative variations that would produce different results - either further reducing or increasing the assumed relativity for single people - but it was considered that these options provided reasonable extremes. That is, the results of this sensitivity testing should provide boundary estimates or upper and lower bounds of the extent of relative low income among the older population in each country.

Appendix Table 4.1: **Equivalence scales used in sensitivity testing**

	A **McClements scales scales**	**B** **Variant 1**	**C** **Variant** 2	**D** **Variant 3**
Head	0.61	0.61	0.55	0.75
Spouse	0.39	0.39	0.45	0.25
Other 2nd adult	0.46	0.46	0.48	0.29
3rd adult	0.42	0.42	0.46	0.27
Subsequent adults	0.36	0.36	0.42	0.23
Children aged:				
0 - 1	0.09	0.12	0.09	0.09
2 - 4	0.18	0.24	0.18	0.18
5-7	0.21	0.28	0.21	0.21
8 - 10	0.23	0.31	0.23	0.23
11 - 12	0.25	0.33	0.25	0.25
13 - 15	0.27	0.36	0.27	0.27
16+	0.36	0.48	0.36	0.36

Appendix Table 4.2 shows the results of the sensitivity testing for estimates of the percentage of persons of different types in the lowest quintile of the equivalent income distribution in each country. The table summarises the range of estimates by showing the range of results, i.e. the lowest and highest percentages, with the standard McClements-based results in brackets.

Appendix Table 4.2: **Sensitivity testing - range of estimates of the percentage of persons in the lowest equivalent income quintile by different equivalence scales, selected countries, mid 1980s**

	Single older people		**Older couples**		**Non-older people**	
United Kingdom	12.7 - 37.1	(20.3)	17.7 - 27.3	(25.2)	18.5 - 20.7	(19.5)
France	12.3 - 30.5	(15.5)	6.3 - 16.2	(15.8)	19.7 - 21.9	(20.7)
Germany	19.1 - 40.9	(26.7)	17.9 - 21.3	(19.0)	17.8 - 20.2	(19.3)
Italy	17.4 - 30.7	(23.5)	15.4 - 18.6	(18.0)	19.3 - 20.5	(20.0)
Luxembourg	18.4 - 32.4	(24.6)	26.5 - 30.5	*(30.5)*	18.3 - 19.3	(18.9)
Netherlands	3.7 - 28.0	(15.5)	8.4 – 9.0	(9.0)	20.4 - 22.0	(22.0)
Australia	34.5 - 59.5	(48.7)	24.2 - 36.3	(34.4)	16.8 - 18.4	(17.3)
Canada	20.2 - 44.3	(27.3)	15.4 - 21.2	(20.3)	18.8 - 20.2	(19.7)
Sweden	36.0 - 66.2	(48.2)	12.1 - 28.4	(23.7)	15.5 - 18.2	(16.3)
United States	26.2 - 38.5	(30.8)	13.1 - 15.6	(15.2)	19.1 - 20.1	(19.6)

Note: The figures in brackets are the estimates accordi g o the McClements scale.
Source: Estimated from LIS data tapes.

For example, Appendix Table 4.2 shows that under the standard equivalence scales, 20.3 per cent of single older people are in the lowest income quintile of the UK income distribution, but if other scales had been chosen then this figure could be as low as 12.7 per cent or as high as 37.1 per cent. Again, using the McClements scales it is estimated that 25.2 per cent of older couples are placed in lowest income quintile, but alternative scales would produce results ranging between 17.7 and 27.3 per cent. It is very apparent that the proportion of non-older people in the lowest quintile is relatively insensitive to the choice of equivalence scales in all countries. These estimates differ by only around one or two percentage points. This is not unexpected given the broad category of `non-older people'. The proportion of older couples found to be in the lowest quintile tends to be more sensitive, however, although particularly so in some countries - the United Kingdom, France, Australia, and Sweden. In contrast, the proportion of older couples in the lowest quintile in the Netherlands appears to be basically unaffected by the equivalence scales chosen, being between 8.4 and 9.0 per cent under all variants. The ranges for Germany, Italy, Luxembourg, Canada and the United States are also not particularly wide.

The results for single older people are clearly the most sensitive to the use of different equivalence scales. In all countries, the range of estimates differs by at least ten percentage points, and in Sweden the range is 30 percentage points. Proportionately, the range is wide in all countries, but particularly in the

Netherlands where the highest estimate is more than seven times as great as the lowest. In all countries, the base estimate using the McClements scale falls between the two extremes.

Appendix Table 4.3 shows the sensitivity of estimates of the percentage of all older people below 40, 50 and 60 per cent of average income to the choice of equivalence scales. This table is in the same format as Appendix Table 4.2. The implications of this sensitivity testing are most clearly seen in the figures that follow. Appendix Figure 4.1a shows the sensitivity of results for single older people at the 40 per cent level in the UK and other EC countries, while Appendix Figure 4.lb shows these figures for the UK and the non-EC countries.

There are three ways of considering these results. The first is based on the assumption that the choice of equivalence scale is essentially arbitrary, so that all we need to know is whether the result for any one or all countries changes significantly if the equivalence scale is chosen. The second perspective follows the work of Atkinson (1985). Even if specific results are sensitive to the choice of equivalence scales, so long as the curves for particular countries do not cross each other, then we can say that the level of relative low income is higher or lower in one or other country, *assuming that the same equivalence scale - whichever one is chosen - is appropriate in all countries.*

Appendix Table 4.3: **Sensitivity testing - range of estimates of the percentage of older people below proportions of average equivalent income by different equivalence scales, selected countries, mid 1980s**

	40% line	50% line	60% line
United Kingdom	1.2 – 3.0 (1.2)	5.8 - 15.9 (8.1)	21.9 - 39.1 (26.9)
France	2.9 – 3.1 (3.1)	5.4 - 11.4 (5.9)	15.0 - 26.8 (19.4)
Germany	3.4 – *6.6* *(4.1)*	10.0 - 14.3 (10.9)	16.1 - 26.2 (18.2)
Italy	6.8 - 10.7 (7.4)	13.1 - 18.8 (15.1)	24.4 - 31.9 (26.7)
Luxembourg	2.7 – 6.3 (3.3)	9.7 - 16.6 (11.9)	19.4 - 27.5 (21.3)
Netherlands	0.3 – 0.8 (0.3)	1.7 – 2.9 (2.9)	6.0 – 8.1 (6.4)
Australia	5.5 - 17.0 (5.9)	13.9 - 37.3 (30.0)	49.6 - 58.8 (57.6)
Canada	4.0 – 6.6 (4.6)	9.2 - 18.3 (11.3)	21.6 - 34.9 (27.2)
Sweden	1.0 – 1.5 (1.0)	2.4 - 10.4 (4.9)	11.8 - 24.5 (14.8)
United States	13.2 - 19.3 (15.0)	22.9 - 29.0 (25.2)	32.0 - 36.7 (34.4)

Note: The figures in brackets are the estimates according to the McClements scale.
Source: Estimated from LIS data tapes.

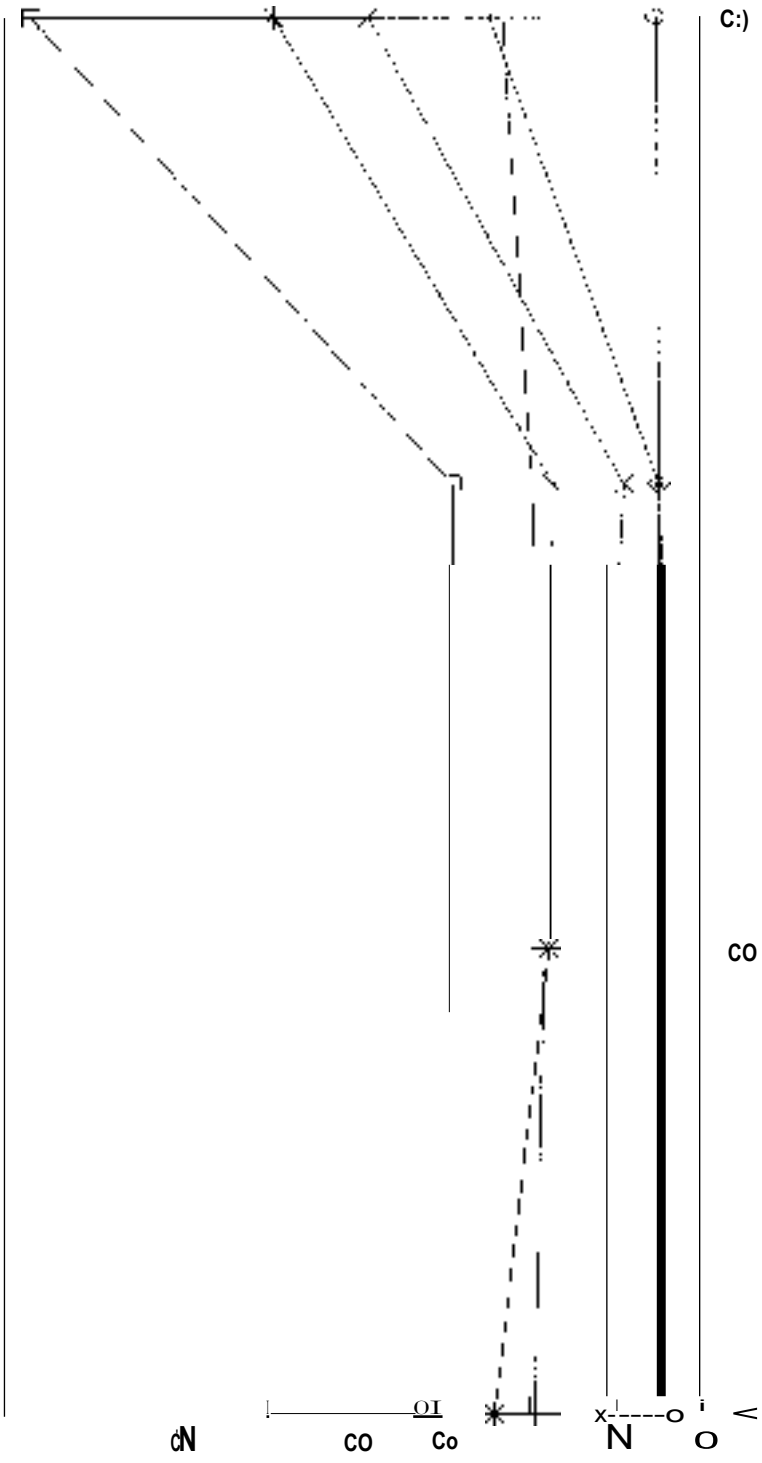
The third view is that different equivalence scales may be appropriate in different countries, reflecting the effects of the different structures of indirect taxes and housing, health, and transport policies on the relative needs of households in *each* country. Given that benefit systems have different implicit equivalence scales in different countries, and these systems should approximate to the relative needs of households if they are to be sustained, it is plausible that single older people may need 60 per cent of the net cash income of couples in one country, and 75 per cent, say, in another. If the `right' equivalence scales differ between countries, then it is difficult to make comparisons, unless the curves shown in the following figures potentially never intersect'[&]

If the second perspective is correct, then some broader conclusions follow. For example, the curve for the United Kingdom intersects only with those for the Netherlands and France in Appendix Figure 4.1a and only with that for Sweden in Appendix Figure 4.lb. This implies that the level of relative low income is higher in all countries (apart from these) than in the United Kingdom. Again the results for Italy lie outside those for all other countries in Appendix Figure 4.1a, suggesting that Italy has a greater proportion of single older people with incomes below 40 per cent of the average than any other EC country in this study, irrespective of the choice of equivalence scale. Moreover the results for France show that its curve

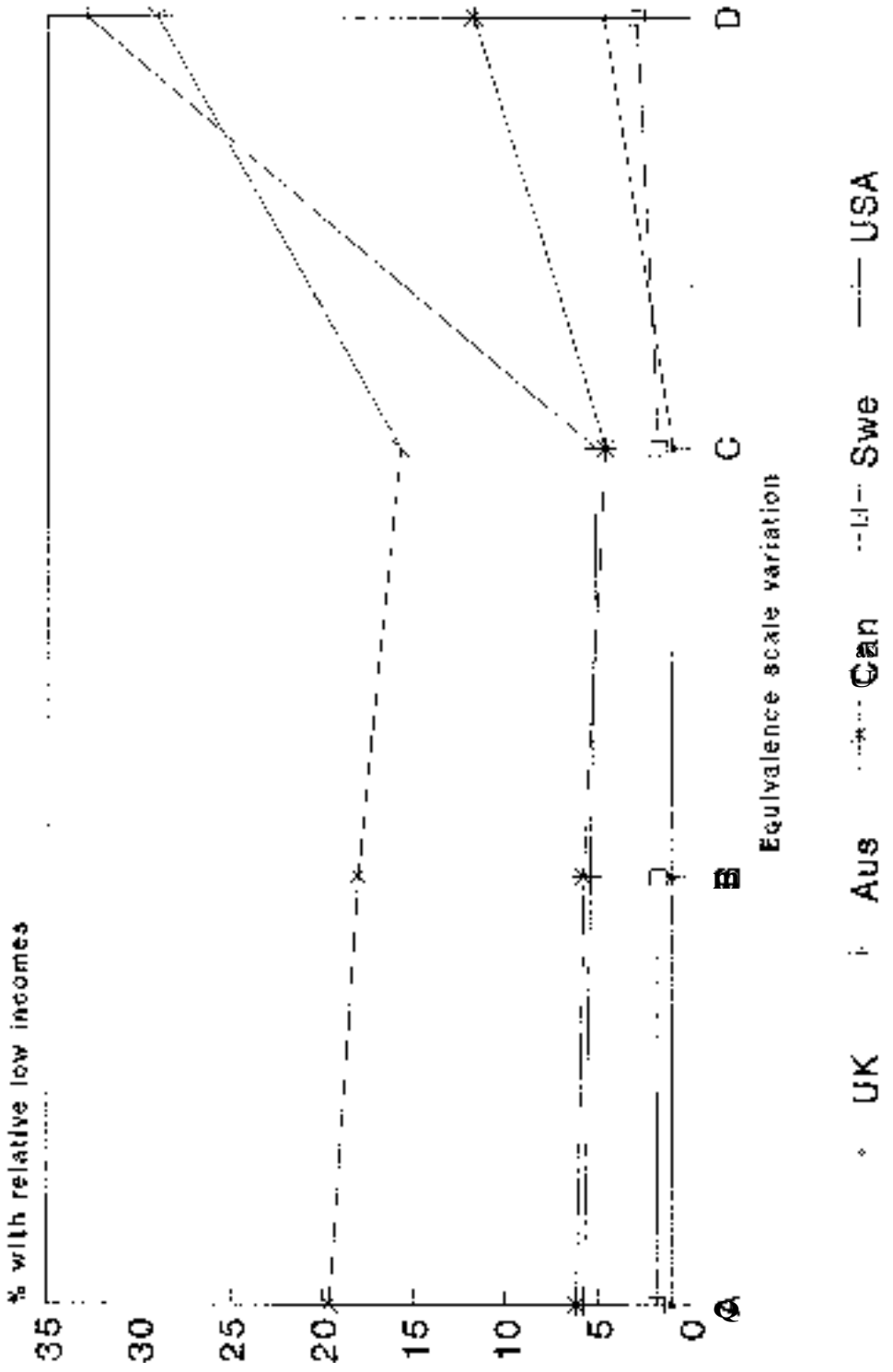
'$ This discussion also ignores the possibility that the appropriate equivalence scales lie outside the bounds tested (<0.55 or >0.75), or that the results are discontinuous within these bounds.

intersects with that for Germany (twice), as well as Luxembourg and the United Kingdom, and the French curve would also intersect with those for Australia and Canada. This means that no unambiguous statement could be made comparing the extent of relative low income in France compared to any of these countries.

Appendix ***Figure 4.1a:*** **Percentage of single older people with incomes below 40% of average income by equivalence scale**



Appendix Figure 4.Ib: **Percentage of single older people with incomes below 40% of average income by equivalence scale**

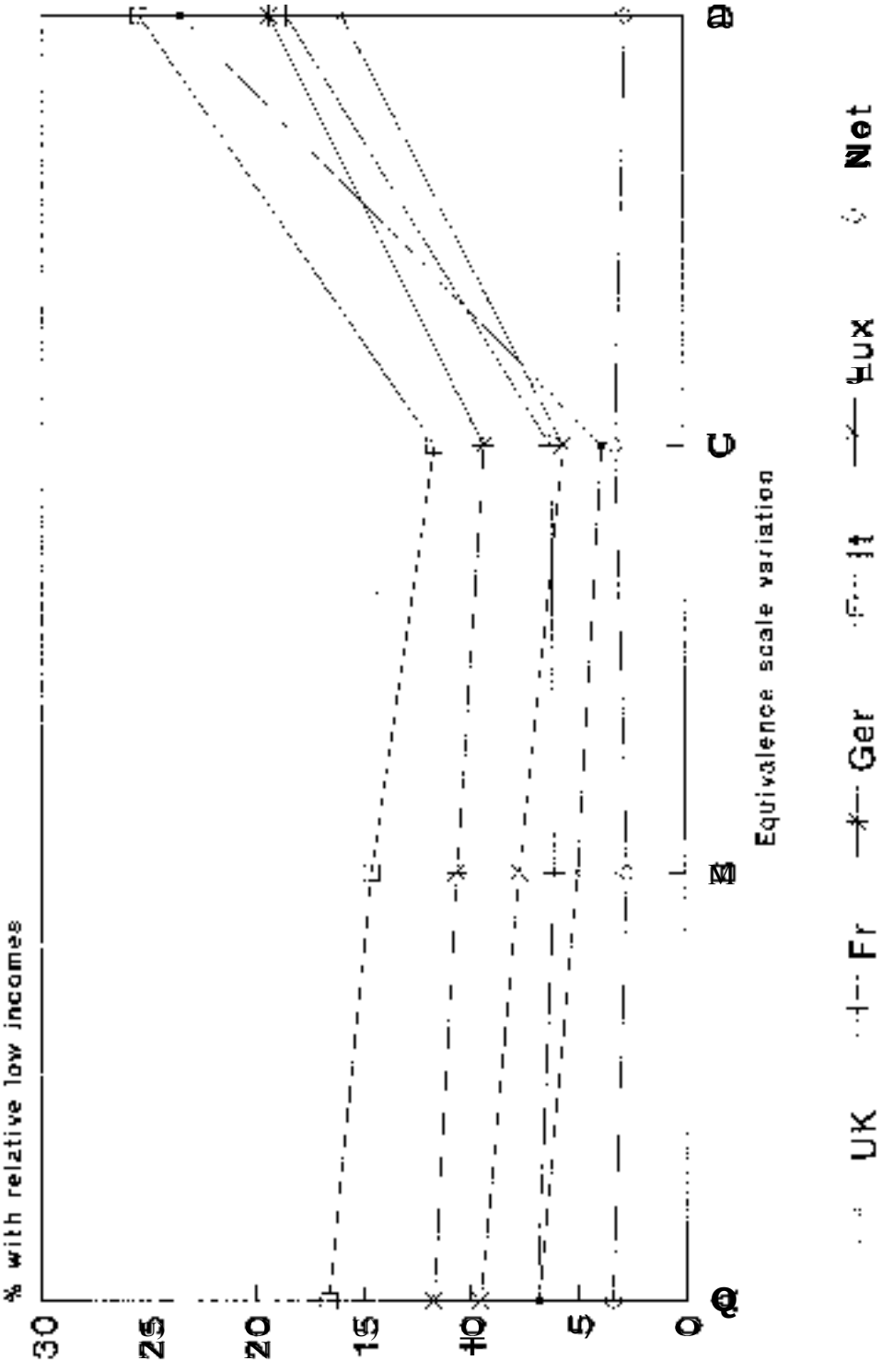


If the appropriate equivalence scale differs between countries then the range of acceptable conclusions narrows even further. For example, in Appendix Figure 4.la the estimates for the UK under scale `D' are higher than for some point for all countries. In addition, Appendix Figure 4. l b shows that the maximum level of relative low income in the United Kingdom is about the same as some of the lowest estimates in Canada and Australia, so that only the United States has unambiguously higher levels of low income than the UK at this level.

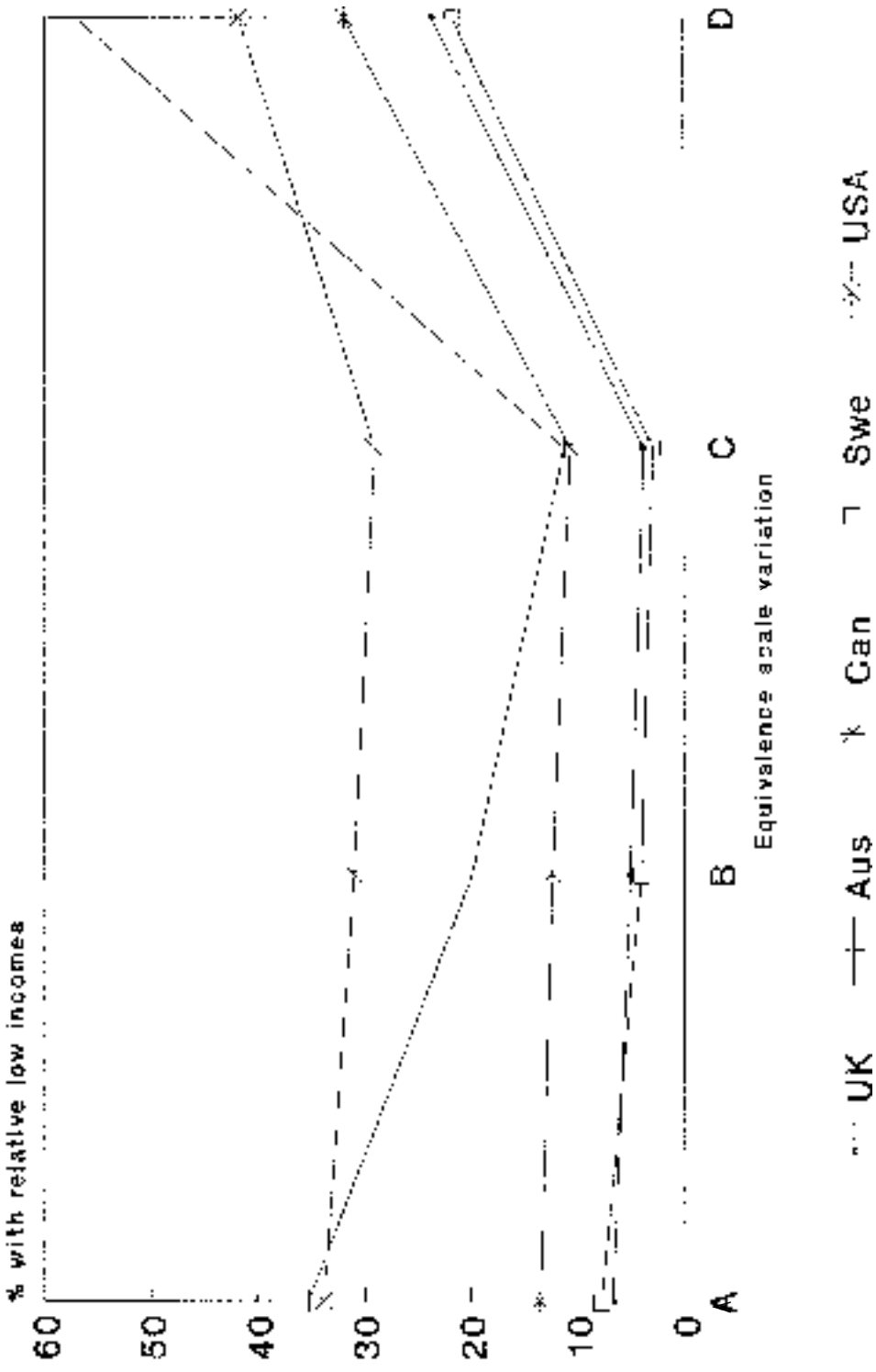
To recapitulate, it can be noted that the standard HBAI approach finds that the proportion of single older people with incomes less than 40 per cent of the average

in the United Kingdom is lower than in any of these other countries apart from the Netherlands, although the level in Sweden is also very low. While these particular estimates are not very sensitive to the choice of equivalence scales for the UK, the results for other countries are more variable. If the equivalence scales are varied, but the same variation is applied to all countries, then it is possible that the level of low income is lower in France than in the United Kingdom. All other countries have higher proportions of this population group with incomes below the 40 per cent level. However, if the appropriate equivalence scale differs between countries then it can be concluded that only Italy and the United States unambiguously have a higher proportion of the single older population below this level.

Appendix Figure 4.2a: **Percentage of single older people with incomes below 50% of average income by equivalence scale**



Appendix Figure 4.2b: **Percentage of single older people with incomes below 50% of average income by equivalence scale**



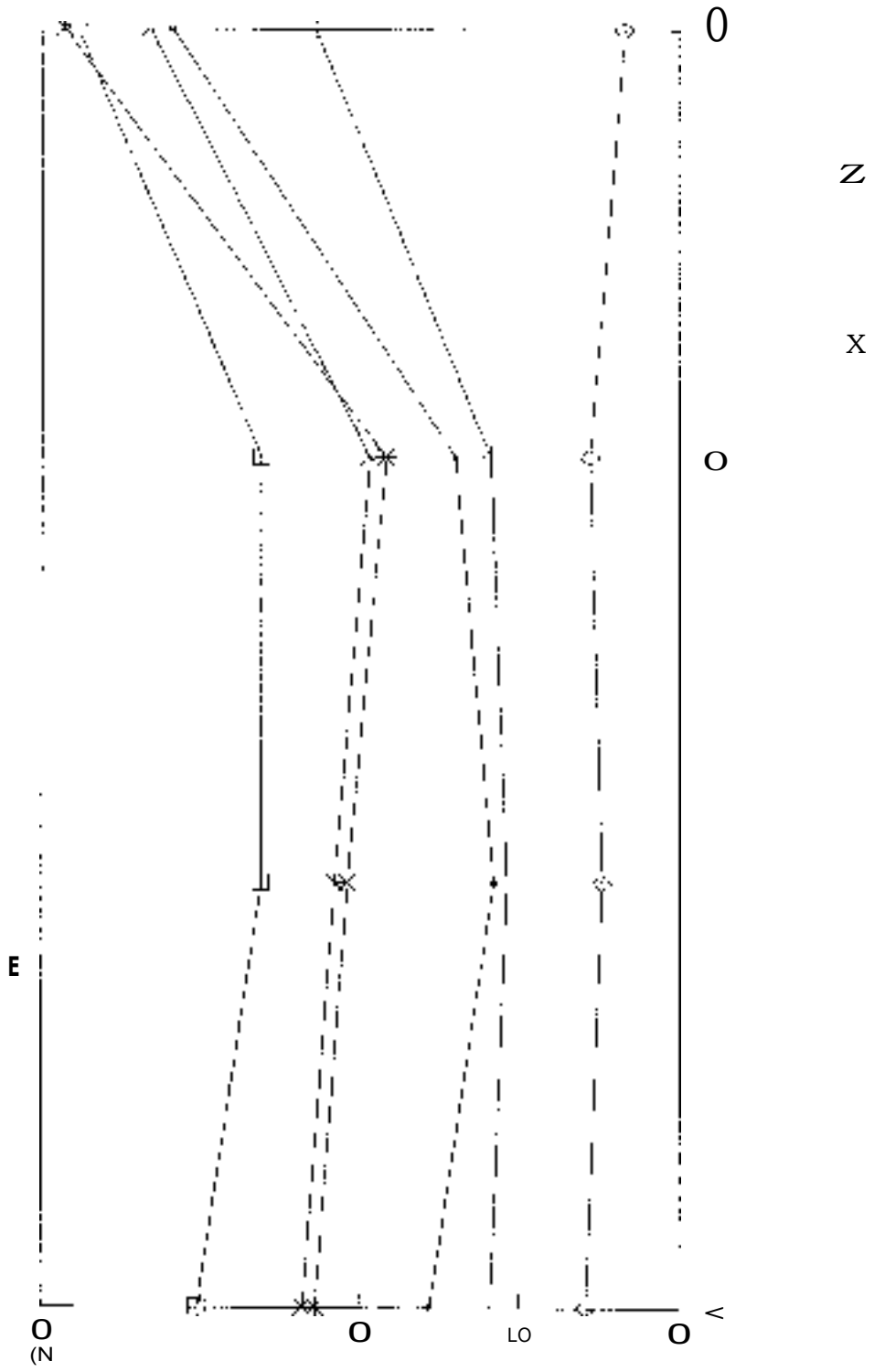
Appendix Figures 4.2a and 4.2b repeat this approach for the 50 per cent level. It is apparent that at this level the results are more sensitive to the choice of scale `D'. Among the EC countries included, the results for the United Kingdom increase most rapidly, when moving from scale `C' to scale When compared to the non-EC countries in Appendix Figure 4.2b, the rate of increase in the UK is similar to those in Sweden and Canada. The results for Australia, however, are most sensitive to the choice of scale at this income level.

Finally, Appendix Figures 4.3a and 4.3b show the percentage of all older people with incomes up to 50 per cent of average income, according to different

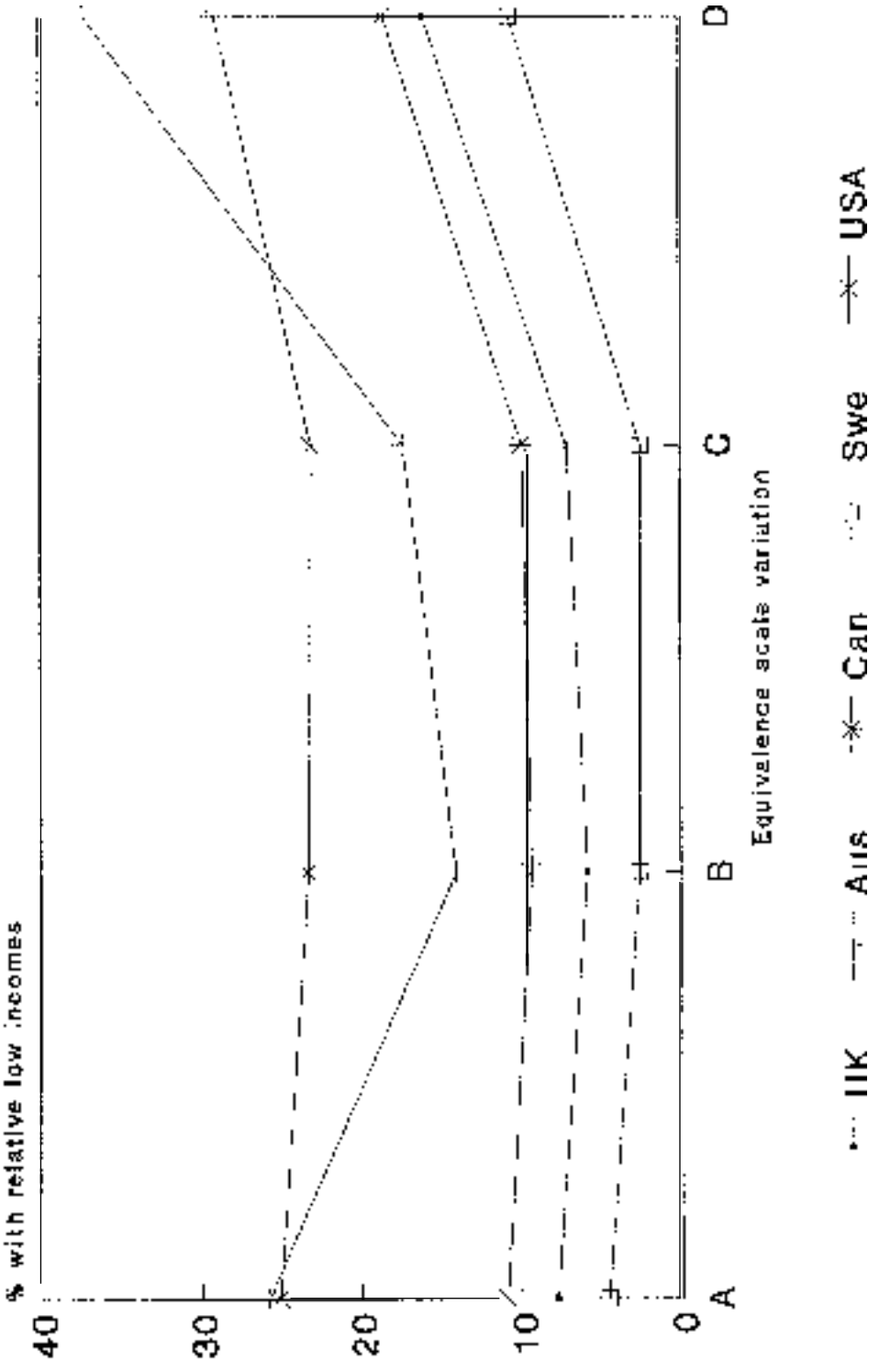
equivalence scales. The effect of changing scales on estimates of low income for the entire older population is not as dramatic as for single older people, because increases in the proportion of single people with relative low incomes tend to be affected by falls in the proportion of older couples in this situation. Appendix Figure 4.3a shows that the United Kingdom has a higher proportion of the older population with low incomes than has the Netherlands or France, but that Germany, Italy and Luxembourg have higher proportions with low incomes than the UK. Appendix Figure 4.3b shows that only Sweden among the non-EC countries has a lower proportion of older people with relative low incomes, irrespective of the scale chosen.

In summary, this discussion has suggested that some of the results in the previous sections of this report are quite sensitive to the choice of equivalence scales. Having said this, it should be noted that alternative scales may produce lower estimates of the proportion of older people in the United Kingdom with relative low incomes, while other scales would produce higher proportions with low incomes. The significance attributed to this sensitivity depends upon whether the same equivalence scales should be applied in each country, or whether the appropriate scales are specific to each country. This sort of question cannot be resolved by the type of data available in LIS, although clearly it is an important issue in international comparisons of income distribution.

Appendix Figure 4.3a: Percentage of all **older people with incomes below 50% of average income by equivalence scale**



Appendix Figure 4.3b: Percentage of all older people with incomes below 50% of average income by **equivalence scale**



Appendix 5 Methodology for Imputing Noncash Benefits

This appendix describes the methods used to impute noncash incomes from health, education, and housing to households in the LIS data tapes. The precise approach adopted for each country differs according to the arrangements existing in each of these areas and the data available. Nevertheless, the procedures adopted for each country follow the same methodological approach. To explain the general approach taken in this study, we take as an example the procedures used to impute noncash benefits to households in the United Kingdom 1986 data tape. This is followed in Appendix Six by a brief description of the methods used for the other countries in this study.

The rationale for including noncash components in a definition of income suitable for international comparisons was discussed at length in Chapter Four of this report. We do not therefore propose to repeat the arguments. The purpose of this Appendix is to explain the methodological approach taken, and to outline the data sources used. For a more detailed discussion of the theoretical and *conceptual* issues involved in measuring and imputing noncash benefits, the reader is referred to Chapter Four, and to Smeeding *et al.* (1992, forthcoming).

The imputation of noncash income in the United Kingdom

The noncash incomes imputed to households in the United Kingdom 1986 data tape include public expenditures on health care via the National Health Service, expenditures on state nursery, primary, and secondary schools, imputed incomes from owner-occupied housing, and noncash housing subsidies for public sector tenants. We now describe in detail the procedures used to impute noncash incomes in these areas.

Health

The approach taken in this study treats public expenditures on health care in an analogous way to health insurance. Benefits were calculated according to the average utilisation of health care by individuals in each age/sex subgroup in the population, and according to the total cost of those services. The estimates of per capita expenditures, thus derived, were used in conjunction with data on the age and sex of household members, from the LIS data tapes, to calculate the total value of health benefits received by each household.

Our approach to assigning health benefits to households is very similar to that adopted by the Central Statistical Office (CSO) in its regular analyses of *The effects of taxes and benefits on household income* (see for example Central Statistical Office, 1988). In the CSO analyses, individuals are allocated benefits flowing from the different sectors of the National Health Service according to the `average use made of these various types of service by people of the same age and sex, and according to the total cost of providing those services' (Central Statistical Office, 1988, p.117). This approach contrasts with that used in another study of the impact of noncash incomes (Evandrou *et al.,* 1992), which uses data on the *actual* reported use of NHS services (from the *General Household Survey)* rather than the average usage. Preliminary comparisons (not reported here) of our results with those of the CSO and LSE studies indicated that our approach resulted in a very similar distributional picture to that suggested by the CSO study. However, there were notable differences between our results and the those of the LSE study. In particular, our estimates (and those of the CSO) suggest a far higher level of

benefit for retired households than does the LSE study. This may be an result of the fact that our study uses health utilisation data which covers the whole population (both those living in private households *and* the institutionalised) whereas the LSE study uses GHS data which excludes those not living in private households (see Evandrou *et al.,* 1992, for a comparison of the LSE and CSO approaches; and the discussion of data sources below).

In order to impute health benefits to households in the United Kingdom 1986 data tape using the `risk-related insurance premia' approach, three sets of data were used: information on total National Health Service expenditure for the United Kingdom for 1986; data on the utilisation of health services; and information on the age/sex structure of the UK population in 1986.

Information on total NHS expenditure for the UK for 1986 was obtained from the relevant chapter of the 1989 public expenditure White Paper (HM Treasury, 1989, Ch.14). According to the White Paper, total NHS expenditure in 1986-87, including capital outlays, amounted to £18,868 million. Hospital and Community Health Services (HCHS) accounted for £13,885 million, Family Practitioner Services (FPS) £4,273 million, central administration £167 million, and Central Health and Miscellaneous Services (CHMS) £543 million. Expenditure on central administration and CHMS cannot be readily related to utilisation data, so these expenditures were distributed to all individuals on a per capita basis.

Within the HCHS sector, it is possible to estimate the proportion of total expenditure spent on hospitals alone. This was calculated for this United Kingdom using information on the amounts spent on each HCHS service area contained in the *Health Service Costing Returns* for England and Wales for 1986-87 (DHSS/Welsh Office, 1987). As with central administration and CHMS, utilisation data is not readily available for community health services, so expenditure on this sector, estimated at £1,611 million, was allocated on an equal per capita basis to all individuals.

For the hospitals sector we have utilisation data for both inpatient and outpatient activity. The proportion of total hospital expenditure spent on each area was estimated from DHSS/Welsh Office (1987). The subtotals thus derived were £9,795 million for inpatient activity, and £2,479 million for outpatients.

Spending on Family Practitioner Services comprises spending on General Medical Services (General Practitioners), pharmaceuticals, General Dental Services, and General Ophthalmic Services. The proportion of total FPS expenditure accounted for by each of these areas was estimated from tables showing the proportion of total NHS gross expenditure spent on each service, along with information on direct payments by patients in each area (both were obtained from Office of Health Economics, 1989). On this basis, total net expenditure for 1986-87 was estimated to be £3.461 million for General Medical and pharmaceuticals, £641 million for dental services, and £171 million for ophthalmic services. Since we only have data relating to GP consultations, the expenditures on dental and ophthalmic services were allocated equally on a per capita basis.

The total amount of public spending on health services relevant to utilisation data, thus derived, amounted to £15,735 million, or 83 per cent of total NHS expenditure in 1986-87. Having derived these totals, the next step involved the calculation of per capita expenditures by age and sex.

Appendix Table 5.1: **Per capita health expenditures by age and sex, United Kingdom, 1986-87 (£ per year)**

Component of spending	Age group	Males	Females
In-patient services	0-4	120	94
	5-14	45	32
	15-19	44	42
	20-24	43	51
	25-34	42	58
	35-44	51	79
	45-54	92	101
	55-64	189	163
	65-74	401	372
	75+	*973*	1236
Out-patient services	0-14	27	24
	5-15	30	32
	16-44	42	34
	45-64	61	59
	65-74	45	49
	75+	64	67
General medical and pharmaceuticals	0-4	81	95
	5-15	41	41
	16-44	27	82
	45-64	54	68
	65-74	68	82
	75+	108	95
Other expenditures*	All ages	55	

Note: *see text

For spending on inpatients, the utilisation data used relates to the average number of beds used daily per million population, by age group and sex, for England from the *Hospital In-patient Enquiry 1985* (DHSS/OPCS, 1987). The justification for using this data rather than, for example, inpatient *spells* by age and sex, is that the NHS, and the hospital sector in particular, is predominately labour-intensive (Office of Health Economics, 1989). Data which reflects both the number of spells *and* the average duration of stay, by age and sex, can therefore be expected to provide a more accurate indication of resources actually `consumed' than information relating solely to the number of spells.

The procedure used to estimate average per person expenditures on inpatient services was as follows. The utilisation data showing average number of beds used daily per million population was used, along with data on the age/sex structure of the population in 1986 from the *1993 Annual Abstract of Statistics* (Central Statistical Office, 1993), to calculate the proportion of all NHS beds occupied daily by each age/sex subgroup. This data was then used to distribute total expenditure on inpatients to the age/sex subgroups. Finally, dividing these totals by the number of persons in each age/sex cell yielded an estimate of per capita expenditures on inpatient services by age and sex.

The procedures used for outpatient services and General Medical/pharmaceuticals follow the same approach outlined above. For outpatient services, we used published tables from the *1986 General Household Survey* showing the average number of outpatient attendances per 100 persons per year, by age and sex. For General Medical and pharmaceuticals, we used data on the average number of GP consultations per person per year, by age and sex, also from the *General Household Survey* (both tables from Office of Population Censuses and Surveys, 1989). The resulting per person expenditures are shown in Appendix Table 5.1. Since the expenditure figures used refer to the financial year 1986-87, these amounts were deflated to 1986 prices using the GDP deflator from the *Economic Trends Annual Supplement* (Central Statistical Office, 1990a).

The procedures outlined above for the United Kingdom provide an indication of the methodological approach which we adopted to impute noncash health benefits in the countries included in this study. However, the precise methods used for each country may differ from that outlined above since our procedures, wherever possible, take account of the varying institutional arrangements and coverage of health care systems. In the United States, for example, a significant proportion of total health care is provided by employers as fringe benefits. The approach we adopted for the United States therefore takes this into account. A brief description of the procedures adopted for each country is provided in Appendix Six of this report.

Although the imputation of noncash benefits largely relies upon data on health care expenditure, coverage and utilisation from national data sources, it was necessary to ensure that the data used was fully comparable, for example with respect to the definitions employed. We were fortunate in this respect in that much detailed groundwork had already been undertaken by the authors of the previous LIS-based noncash study (Smeeding *et al., 1992.* forthcoming). Nevertheless, as the authors of the LIS noncash study admit, it is difficult to obtain data on health expenditure which is based upon rigorously consistent definitions. In particular, the degree to which expenditures on services at the boundary of health and social care (for example, home care for the elderly) are included may vary between countries. To minimise these inconsistencies, we used detailed data published by the Organisation for Economic Co-operation and Development (OECD) on health care expenditures (OECD, *1993)* to determine the total value of health care services imputed to households in the countries included. Hence although data on eligibility, coverage and utilisation of services largely derives from national sources, information on expenditures (total expenditure and expenditures by sector) were obtained from published OECD data which has been compiled with international comparisons specifically in mind.

Education

Information on total public expenditure on state education was obtained from the *1993 Annual Abstract of Statistics* (Central Statistical Office, 1993). The totals for the United Kingdom for 1986-87 (including capital expenditure) for nursery schools, primary schools, secondary schools, and special schools were *£88* million, £4337 million, *£5770* million, and *£750* million, respectively. To these totals we included expenditures on school welfare, meals and milk, and the transportation of pupils amounting to *£889* million. These were reallocated to each level of education in proportion to the number of pupils in each type of school (from Department of Education and Science, 1988). The revised totals for nursery, primary, secondary, and special schools were *£98* million, £4810 million, £6164 million, and *£762* million, respectively.

Since it is not possible to identify pupils attending special schools from the LIS data tape, we decided to reallocate spending on special schools to the other three sectors. This was done using data on the age distribution of pupils in special schools from the *Education statistics for the United Kingdom 1988* (Department of Education and Science, 1988). The final totals for nursery, primary, and secondary schools were, respectively, £140 million, £5051 million, and *£6643* million. The last step was to divide these totals by the number of pupils in each type of school to obtain estimates of per pupil expenditures. Applying the GDP deflator to convert to 1986 prices, the final per pupil expenditures were estimated to be £1,387 for nursery schools, £1,046 for primary schools, and £1,635 for secondary schools.

These per pupil expenditures were then used to allocate education expenditures to individual households, along with data on the LIS tape showing the ages of children in each household. For children below compulsory school starting age, we allocated expenditures according to the probability of a child aged between two and four attending either a nursery school or a pre-school class in a primary school. These probabilities were calculated using tables showing the number of

pupils by age and school type, and detailed information on the age structure of the child population for the United Kingdom for 1986 (Department of Education and Science, 1988). For pupils above compulsory school age, we employed a similar procedure, using information on participation rates for 16, 17 and 18 year-olds calculated from the same source as above.

As with health care, we were aware that using national data sources to estimate per pupil expenditures and participation rates could result in misleading comparisons due to the use of different definitions in the countries concerned. We therefore decided to use, wherever possible, international data sources based upon consistent definitions and concepts. In this respect, comparative data published annually by the United Nations Educational, Scientific and Cultural Organisation (UNESCO) was found to be particularly useful (UNESCO, various years). In addition, we drew upon comparative data on participation rates for three to six year-olds and for 16 to 18 year-olds compiled by the United Kingdom Department of Education and Science (Department of Education and Science, 1985; 1986a; 1989).

Housing

The valuation of noncash incomes from housing, in the form of both imputed income for owner-occupiers and noncash housing subsidies for renters, proved to be especially problematic. This was largely due to the lack of comparable data on housing across countries, which in turn probably reflects the different housing markets and institutional arrangements existing in the countries. As a result, we were able to provide estimates of noncash housing incomes for five countries only (the United Kingdom, Germany, Canada, Australia, and the United States). In addition, the methods used to estimate noncash housing income differ slightly between countries. It is important to bear this in mind when comparing countries. The precise approach adopted for each country is described in greater detail in Appendix Six.

Our preferred approach was the same as that employed in the previous LIS study of noncash incomes (Smeeding *et al.,* 1992). For owner-occupiers, imputed rent in most of the countries is estimated equal to a fixed interest return (two per cent plus inflation) on housing equity. However, data on the level and distribution of housing equity was not available for all countries. In the case of the United Kingdom, we considered using data on the level and distribution of housing equity from the *1986 English House Condition Survey* (Department of the Environment, 1988). In particular, we explored the possibility of using published estimates based on analyses of EHCS data of net housing equity by income level and by age of household head, kindly provided by Philip Leather of the School of Advanced Urban Studies (SAUS) at the University of Bristol (see Mackintosh, Means and Leather, 1990). However, after much deliberation it was decided not to use these estimates. This was decided for three reasons. First, the EHCS data, by definition, covers England only. No comparable data is available for Wales, Scotland or Northern Ireland. Second, there are serious deficiencies in the income data in the 1986 EHCS, as the report acknowledges (Department of Environment, 1988). Third, the tables provided by SAUS were not thought to be sufficiently detailed to provide the necessary data on the distribution of housing equity. This data could have been obtained by re-analyzing the original EHCS data tape, but the extra time, expense and effort this would involve was not considered justifiable given the deficiencies of the data.

As an alternative to the `rate of return on housing equity' approach, we decided to use the estimates of imputed incomes for owner-occupiers already included in the LIS United Kingdom 1986 data tape. These estimates are those included, until recently, in the Family Expenditure Survey (FES) reports. These estimates are based upon adjusted rateable values, and they provide a measure of the net income which could be obtained by letting out the dwelling to a tenant (see Department of Employment, 1988, Appendix A). Although in theory this approach should provide an estimate similar to that resulting from the preferred `rate of return on housing

equity' approach, it is unlikely that the two measures will coincide (see Jenkins, forthcoming).

Subsidies for renters take two forms in the United Kingdom. First, cash subsidies are available in the form of Housing Benefit and rent/rate rebates. These are already included on the data ;:ape and are thus incorporated into our measure of cash disposable income. Second, public renters receive subsidies in that the r~ ;t they pay may not reflvt_ t that a a- - uld have to pay for compai (unsubsidised) privately-rented property. Orr preferred approach was therefore to measure housing subsidies for renters as the difference between the (counterfactual) free market rent and the actual rent paid.

For the United Kingdom, we used the estimates of rent subsidies for public sector tenants in the *Effects of taxes and benefits on household income* article for 1986 (Central Statistical Office, 1988). In the CSO article, an individual household's `housing subsidy' is measured as its `share of the region's total relevant subsidy based on the gross rateable value of the dwelling' (Central Statistical Office, 1988, p.118). Housing `subsidy' includes contributions from rate funds and from central government to local authority Housing Revenue Accounts (HRAs), and grants paid to New Towns and housing associations. The measure of noncash housing income we employ is therefore a `cash flow' measure as opposed to the preferred `economic subsidy' measure (see Jenkins, forthcoming). Our approach is therefore not entirely consistent with the preferred methodology. Since there are no estimates of counterfactual `free market' rents readily available, however, we were not able to obtain estimates using the preferred approach.

In the CSO article, results are presented showing the average level of `housing subsidies' (defined as above) for quintile groups within ten household types (See Central Statistical Office, 1988). Since the article is based upon the same data source as the LIS data tape (the 1986 *Family Expenditure Survey),* we were able to estimate the proportion of each quintile group within the ten household types who were public renters by categorising households first by their household type, and then by quintiles of `original income' (using the same definition as the CSO article). We were then able to calculate the average subsidy per public renter household.

Our estimates of noncash housing incomes for the United Kingdom are therefore not entirely satisfactory in relation to the approach we would have preferred to have taken. Nevertheless, it was felt that some attempt to quantify the extent of noncash housing incomes was preferable to none at all. It should be noted, however, that the United Kingdom is not typical of the countries included in this study for which we were able to estimate noncash housing incomes in that the methods used for the United States, Canada, Australia, and Germany are broadly consistent with our preferred approach. Details of the methods used in these countries is provided in Appendix Six.

Final income concepts

The results in Chapter Five of this report employ two `final income' concepts in addition to disposable cash incomes. The first measure (`final income 1') includes noncash incomes from health services and education (estimated using the methods described above) in addition to disposable cash income (as defined in Chapter 4, Table 4.1). The second measure (`final income 2') is equal to final income 1 *plus* noncash housing income (imputed income for owner-occupiers and rent subsidies for public sector tenants). Since we were not able to produce estimates of noncash housing incomes in the Netherlands and Sweden, results using `final income 2' are presented for the United Kingdom, (West) Germany, Canada, Australia, and the United States only.

In the *Effects of taxes and benefits on household income* analyses (from 1987 onwards) households have been categorised by quintiles of equivalised disposable income (Central Statistical Office, 1991b, p.94). However, in the results that are

presented, final (cash plus noncash) incomes are not equivalised. In our analyses however both `final income 1' and `final income 2' *are* equivalised. The two final income concepts can therefore be represented in the following way:

$$Y_1 = (\text{DPIPOS} + \text{HEALTH} + \text{EDUC}) \text{ I } E$$
$$= (\text{DPIPOS} + \text{HEALTH} + \text{EDUC} + \text{HOUSING}) E$$

where Y_1 and Y_2 are (equivalent) final income 1 and (equivalent) final income 2 respectively, DPIPOS is disposable income (set to zero where this is negative, following the practice in *Households Below Average Income),* HEALTH is noncash health income (derived using the methods described above), EDUC noncash income from public (state) education, and HOUSING noncash income in the form of rent subsidies or imputed income from owner-occupation. The sum of these components is divided by the `equivalence factor' for the household, estimated using the McClements equivalence scale (before housing costs) as described in Appendix Two.

We have therefore used an equivalence scale derived for cash disposable incomes to adjust *final (i.e.* cash *plus noncash)* incomes to take account of household size and composition. This obviously raises the question of whether the same scales *should* be applied to both income concepts. This would however require detailed research which is beyond the scope of the present study. In the absence of such research, we therefore had little alternative but to use the existing equivalence scales.

Appendix 6 Noncash Benefit Imputa on Procedures by Country

Appendix Five contains a detailed description of the methods used to impute noncash health, education and housing benefits to households in the United Kingdom 1986 LIS data tape. In this appendix we provide a short description of the procedures used for the other countries included in the analysis. Since the approach taken in each country follows the same basic methodology as that already described for the United Kingdom, the descriptions are brief. The methods used build upon the previous study of noncash incomes using Luxembourg Income Study data (Smeeding *et* al., 1992). The reader is referred to Smeeding *et al.* (forthcoming), in particular, for detailed descriptions of the institutional arrangements existing in each country, and for additional information on the data sources available.

Australia

Our approach to measuring and imputing noncash benefits for Australia follows closely the methods used in the previous LIS study, as outlined by Saunders (forthcoming). We are grateful to Peter Saunders and Robert Urquhart of the Social Policy Research Centre in Sydney for supplying additional data. We would also like to thank Judith Yates for supplying us with data on housing.

Health

For health services, we used aggregate data on public sector health expenditures from the Organisation for Economic Co-operation and Development (1993), along with detailed data on expenditures broken down by sector from the Australian Institute of Health and Welfare (1993). We used detailed utilisation data derived from the 1977-78 and 1983 *Australian Health Surveys* (reproduced in Saunders, forthcoming), covering hospital bed utilisation, doctor visits, and the number of prescribed drugs taken, to allocate these expenditures, along with detailed data on the age/sex structure of the Australian population in 1986 (Australian Bureau of Statistics, 1989).

The Australian public health care system can be described as `two tier'. Although some elements, such as hospital care and community health services, are available free of charge to all the population, other areas are only partially subsidised. In the case of medical services, subsidies only cover 85 per cent of costs, the rest coming from user charges. Holders of `Health Benefit Cards' (mainly social security recipients) however, may receive services free of charge. The eligibility rules for health benefit cards are complex. For recipients of some benefits, health benefit cards are issued without regard to income. For others, eligibility is determined by a means test which takes into account both income and capital in the previous four weeks, the `income unit' being the individual's benefit unit. In addition, the precise rules used to determine eligibility differ according to the type of social security benefit received.

Eligibility for Health Benefit Cards is therefore difficult to model precisely. We decided to adopt a simple approach which deems all individuals in a household eligible for health benefit cards if social security income exceeds 40 per cent of total household gross income. The proportions of individuals in different family types thus estimated to be eligible for health benefit cards was found to be very close to published figures (see Australian Department of Social Security, 1991, p.287).

The greater subsidy received by health benefit card holders was taken into account when imputing health expenditures to households. This was achieved by calculating separate per capita expenditures (differentiated by age and sex) for health card holders and for those not eligible for health cards.

Education

regard to education, the procedures we used follow closely the approach ' for the ` ' ` `:ingdom. Our estimates of per pupil expenditures are b, l upon the estimates in Saunders (forthcoming), which were derived using the same methodology outlined in Appendix Five. These show, for the year 1981-82, per pupil expenditures by level of education, and differentiate between government and non-government schools at both the primary and secondary level.

First we derived an inflator based upon the increase in aggregate education expenditures between 1981-82 and 1985-86 (from Australian Bureau of Statistics, 1992a; 1992b). We applied this inflator to Saunders' estimates to provide per pupil expenditures for 1985-86. We were able to check the accuracy of these estimates by multiplying these per pupil amounts by the total number of pupils in each type of school in 1985-86 (from Australian Bureau of Statistics, 1985; 1986). This resulted in an estimated total expenditure very close to the actual figure (as indicated by Australian Bureau of Statistics, 1992a: 1992b; and by UNESCO, various years).

The participation rates we used were derived from the statistics on school pupil numbers and overall population estimates by age and sex (from the sources indicated above). These estimates also allowed us to estimate the likelihood of a child of a particular age attending either a government or a non-government school (this was particularly important since the two sectors have different per pupil expenditures). As with the United Kingdom. we reallocated pupils in special schools to the appropriate level and type of school. Expenditures on pre and post compulsory education were allocated on the basis of participation rates derived from the sources mentioned above (in the case of pre compulsory age groups) and from Bowers and Dunlop (1984) in the case of 16, 17, and 18 year-olds.

Housing

For housing, our estimates derive from extensive research by Judith Yates into the level and distribution of noncash housing income in Australia, and its impact on the overall distribution of income (Yates, 1991; Yates and Flood, 1987). We include both imputed income for owner occupiers and rent subsidies for public sector renters in our definition of noncash housing income.

Our estimates of noncash housing income from owner-occupation are derived from Yates' estimates based on the 1988/89 Household Expenditure Survey. The estimates are derived on the assumption that imputed income is equal to a rate of return (5 per cent) on housing equity (see Yates, 1991). The methodology is therefore consistent with our preferred approach. We used Yates' estimates of mean imputed incomes and mean cash incomes by age of head of household and gross income decile, to estimate imputed income to cash income ratios. The resulting matrix was then used to estimate imputed incomes for owner-occupier households on the 1985-86 LIS data tape.

In the case of subsidies for public renters, our approach was somewhat more complicated. Yates estimates that in 1984-85 rent subsidies for tenants in public sector housing (measured using a `service flow' concept consistent with our preferred approach) amounted to 482 million Australian dollars (Yates, 1991). Using the overall increase in Commonwealth and State funding for public and state housing between 1984-85 and 1985-86 as an inflator (from Jones, 1990), we estimated that the equivalent figure for 1985-86 was 532 million dollars, or 2096 dollars per public renter household. Hence although the number of public renters in Australia is relatively small, the average subsidy per recipient household is considerable.

Unfortunately, it is not possible to separately identify public and private renters in the 1985-86 LIS data tape. In order to allocate noncash incomes to public renters, we therefore employed an imputation procedure which allocated benefits to a proportion of renters to the public sector on the basis of the probability of being a public renter household.

The approach we used involved three steps, and is essentially the same as that employed by Bradbury. Doyle, and Whiteford (1990). First we estimated a logistic regression model using data from the Australia 1981-82 LIS data tape (which distinguishes between public and private renters) in order to predict the likelihood of a renter household being in the public sector, on the basis of a number of demographic and other characteristics. The independent variables used include age of head (minus 40, and plus 40), the square of both the former, income quartile, state (six dummy variables), single retired person unit, lone parent, whether head working, whether receiving any ;social security, whether receiving family income supplement (all dummies), and the ratio of social security to total household income.

Our model successfully predicted the sector (public or private) of over 80 per cent of renter households when applied back to the 1981-82 data. Of those who were actually public sector tenants, 57 per cent were correctly identified as such. Although this may not appear particularly high, it is a significant improvement on the 18 per cent success rate that would have been achieved if we had used a completely random process to allocate households to either sector.

We applied the model to the 1985-86 LIS data in order to predict the likelihood of renter households being in public sector housing. To account for the increase in the proportion of all renters in government housing between 1981-82 and 1985-86, we selected the 22.3 per cent of households with the highest predicted probability of being in the public sector. To each of these households, we allocated an annual noncash housing income of 2096 dollars (the average noncash housing subsidy for public renters)

Canada

Health

With regard to health expenditures, we use data on total public health expenditures in 1987 derived from tables in Organisation for Economic Co-operation and Development (1990). The utilisation data we employ is that used in the previous LIS noncash study (see Cameron and Wolfson, forthcoming), covering hospital patient activity and visits to health care practitioners (GPs), by age group and sex. In both these sectors, contributions to health insurance plans and out-of-pocket charges are deducted, so that only net subsidies are allocated.

Education

Per pupil education expenditures were calculated using the same approach as the United Kingdom. Our approach draws heavily on comparative data published by the United Nations Educational, Scientific and Cultural Organisation (UNESCO, various years), and on work carried out as part of the previous LIS-based noncash study (Cameron and Wolfson, forthcoming). However, the aggregate expenditure data available for Canada is not sufficiently detailed to allow estimation of per pupil expenditures for different levels of education (data on expenditures by level of education is not available for Canada). We therefore calculated an overall per pupil amount for all levels. In common with other countries in the study, per pupil expenditures for pre and post compulsory education were allocated using a probabilistic approach based upon the relevant participation rates for these age groups. These participation rates were estimated from UNESCO data and from published international comparisons on the educational participation of 16 to 18 year-olds by the United Kingdom Department of Education and Science (1985).

Housing

Noncash housing income includes imputed income for owner-occupiers and rent subsidies provided by municipal and provincial governments (see Fallis, 1990; for an overview of housing finance and housing subsidies in Canada). The amounts we impute to households are based on the estimates presented in Cameron and Wolfson (forthcoming), which in turn were derived from the 1984 Canadian survey of Family Expenditures (FAMEX). The FAMEX survey has a sample size of over 10,000 households, and provides detailed data on the housing and financial circumstances of Canadian households (Cameron and Wolfson, forthcoming).

In the case of owner-occupiers, the FAMEX survey provides information on housing equity. We used the tables showing the average net imputed incomes (estimated by applying a rate of return on net housing equity) of households by tenure status (outright owner or mortgage holder), household type, and income level presented in Cameron and Wolfson (forthcoming) as the basis for our imputations. Since the estimates refer to 1984 we inflated them to 1987 levels using the consumer price index (from the LIS technical database).

The approach used by Cameron and Wolfson (forthcoming) to estimate noncash housing income for renters is entirely consistent with our preferred approach. They estimate rent subsidies using FAMEX 1984 data by comparing the gross rents paid by subsidised and unsubsidised households of similar strata. We therefore used the estimates of average subsidies by age of household head and household head, derived by Cameron and Wolfson, again inflated to 1987 levels using the consumer price index.

Federal Republic of Germany

Health

The public health expenditures we allocate are those covered by the National Health Insurance scheme (NHI). Although NHI provides benefits in the form of cash transfers, we allocate only that proportion of expenditure which is provided in the form of medical services. As with Canada, the amount allocated is net of insurance contributions. In 1984 approximately 92 per cent of the population were covered by the NHI (Organisation for Economic Co-operation and Development, 1993). Since we are not able to identify those who are not covered by the NHI, we allocate health benefits to all households, following the approach adopted by Dobroschke-Kohn and Hauser (forthcoming).

The per capita expenditures by age and sex are based upon estimates produced for 1981 for the previous LIS noncash study (Smeeding *et al.,* forthcoming). These are based upon detailed gender and age-specific utilisation data covering hospitals, medical and pharmaceutical benefits. The per capita expenditures were converted to 1984 levels using the increase in per capita public noncash health expenditures as an inflator (estimated from Organisation for Economic Co-operation and Development, 1993), and taking into account the change in the age/sex structure of the population (Federal Statistical Office, various years)

Education

For education, we used the per student expenditures by level of education estimated by Dobroschke-Kohn and Hauser (forthcoming), converted to 1984 prices using the increase in public spending on schools (from Hauser *et al.,* 1987) as an inflator.

The secondary school system in Germany is somewhat more complex than that existing in the other countries we have included. At the age of ten, pupils are allocated to one of three different types of school according to their abilities. We use separate per student expenditures for each type of school, and we allocate pupils to one of the three types of school using a probabilistic approach. For

children aged ten to 15, we used data on the proportion of children in each of the three types of school from United Kingdom Department of Education and Science (1986b). For `adults' aged 16 and over in the LIS 1984 data tape for Germany, we are able to identify those who are attending school from the labour force status variable, so we use this information (rather than overall participation rates) to allocate expenditures to pupils above compulsory school leaving age.

Housing

For owner-occupiers, we used estimates of net imputed income derived from the German *Transfer Survey* 1981 by Dobroschke-Kohn and Hauser (forthcoming). These show average imputed income for owner-occupiers by eight bands of disposable income (derived using an approach consistent with our preferred method), and have been inflated to 1984 levels using the consumer price index (from the LIS institutional database).

Public sector subsidies in the Federal Republic are in three main forms (or at least were in 1984, the year to which the LIS data refers). First, there are means-tested housing allowances which supplement rent. Since these are cash benefits, they are already included in the LIS data tape. Second, there are numerous subsidies which promote home-ownership. These are mainly in the form of tax allowances and reductions, and as such are implicitly included in our definition of disposable income. Finally, there are a number of subsidies available for renters under the `public housing support' system (Dobroschke-Kohn and Hauser, forthcoming) which vary across the *Lander*.

Because of the complexity and variety of subsidy systems comprising `public housing support' and the lack of adequate data on housing in the Federal Republic, it is not possible to provide estimates of noncash incomes for renters. Our noncash housing income measure for Germany therefore includes imputed income for owner-occupiers only. This should be taken into account when interpreting the results for Germany 1984 incorporating noncash housing incomes.

Sweden

Health

The health expenditures we allocated for Sweden, 1987 comprise public spending on health care via the national health insurance plan. National health insurance coverage provides cash benefits in addition to medical coverage in the form of inpatient and outpatient services. These cash benefits are already included on the LIS data tape, so we allocated only that proportion of health expenditures which is spent on (noncash) medical services.

To allocate the noncash health expenditures, we used detailed utilisation data on total days spent in different types of hospital care, and outpatient visits, by age range (from Association of Swedish County Councils, 1983). We were not able to obtain a breakdown by gender. However, the utilisation data available is somewhat more detailed than that used for the other countries, covering eighteen different age ranges in the case of inpatient services.

Education

For education, we used estimates of net average costs per student by level of education calculated by Statistics Sweden (reported in Fritzell and Hedstrom, forthcoming). Participation rates above and below compulsory school ages were obtained from the same source, and a probabilistic approach was adopted to distribute expenditures in these age ranges.

Housing

We were unable to obtain any data on the distribution of noncash housing incomes for Sweden. For a discussion of the housing finance systems existing in the Nordic countries, the reader is referred to Turner (1990).

The Netherlands

Health

The health care system in the Netherlands consists of four main elements (Organisation for Economic Co-operation and Development, 1992c). First, there is an exceptional medical expenses scheme (AWBZ) which covers the whole population. Second, there is a compulsory health insurance scheme for employees earning below a certain wage level (49150 Guilders in 1987), retired employees, and social security recipients. In 1987 approximately 61 per cent of the population were covered by these funds (Van Doorslaer, Wagstaff, and Rutten, 1993). Third, there is a compulsory insurance scheme for public employees (both current and retired), covering around six per cent of the population. The remainder of the population (around *33* per cent; mainly the self-employed and those earning above the wage cut-off level for compulsory insurance) have to take out voluntary private insurance for those costs not met by the AWBZ scheme.

The Dutch health care system is therefore a mix of public and private provision. In order to impute public health care expenditures to households in the 1987 data tape, we used the following procedure. The total amount we impute was obtained from Organisation for Economic Co-operation and Development (1993). This was broken down by health care sector using data from Organisation for Economic Co-operation and Development (1992c). We distinguished between expenditure on the AWBZ scheme, on the two public `sick fund' health insurance schemes (i.e. the general scheme for wage earners, and the scheme for civil servants), and on public health. Since there was no basis for allocating the latter, we distributed expenditures on public health on a per capita basis. For AWBZ, we used the utilisation data for 1983 which was used in the previous LIS noncash study (see Hagenaars, Zaidi, and de Vos, forthcoming).

In the case of the health insurance schemes for general wage earners and civil servants, we also used the utilisation data used in the previous LIS study, but it was necessary for us to model eligibility for `sick fund' membership. This was done using a simple procedure whereby all members of households with a self-employed head or a head earning more than the `sick fund cut-off' were deemed ineligible for coverage. This procedure excluded 34 per cent of our sample from sick fund coverage.

Education

For education, we were fortunate in that estimates of the value of noncash education benefits (defined as `net government disbursements') are already included in the LIS dataset. This is because the dataset from which the Netherlands 1987 LIS dataset is derived (the *Survey of Income and Program Users) is* used by the Netherlands Social and Cultural Planning Bureau (SCP) for analyses of the distribution of noncash as well as cash incomes (see Hagenaars et al., 1987).

Preliminary comparisons between the methods used by the SCP to impute noncash education benefits and our preferred approach suggested that both methods were broadly similar. In addition, the average (mean) noncash education income per household was found to be very close to that resulting from calculations using UNESCO data. We therefore decided to use the SCP estimates rather than our own. Another reason for using the SCP estimates was that the Netherlands LIS dataset did not include the information on the ages on individual children necessary to impute benefits to households.

Housing

At the time of writing, we are unable to find any detailed estimates of noncash housing income consistent with the LIS approach. A discussion of the extent of noncash housing incomes can however be found in Hagenaars *et al.,* 1987).

The United States

For the United States we have been fortunate in that a considerable body of work has been undertaken by the United States Bureau of the Census into the extent and impact of noncash incomes (see, for example, US Bureau of the Census, 1992a). In addition, we have benefitted from the assistance of Tim Smeeding who, apart from being Director of LIS, was himself instrumental in the development of the methodologies used by the Bureau for dealing with noncash incomes. We are grateful for the advice and assistance he has given us.

Health

The elements of the US health care system of relevance to the present study are public expenditures through the Medicare and Medicaid programmes, and employer-subsidised health care. In the case of Medicare and Medicaid, we were fortunate in that estimates of noncash incomes from these sources are already included in the United States 1986 LIS data tape. The methods used by the Bureau to value and impute benefits to households are consistent with the methodology used in this study. The approach used by the Bureau estimates the value of noncash incomes from Medicare and Medicaid as being equal to the `market value' of the service provided. In other words, the total amount imputed to households equals the cost to the government of the service provided. The actual amount received varies according to the `risk class' of the household and the state of residence (see US Bureau of the Census, 1992; for a comprehensive description of the methods used).

In the case of employer-subsidised health care, we had to use a more complicated procedure to impute benefits to households. In the previous LIS study, employment-related benefits were estimated as a function of the level of non-mandatory employer contributions (fringe benefits), household disposable income, and family size and composition (i.e. risk class). The level of fringe benefits received was the primary determinant of health benefits received (see Smeeding, forthcoming; for a more comprehensive description of the methods used) However, in the 1986 data tape no information is available on receipt of fringe benefits.

Evidence suggests that the level of fringe benefits is influenced by factors such as age, wage level, industry, occupation, and the degree of unionisation (Woodbury, 1990). This was confirmed by a multiple regression analysis carried out on the 1979 LIS data tape, which showed that these factors were indeed powerful predictors of the level of fringe benefits received (the model estimated had an adjusted R^2 of 0.59). We therefore applied the regression equation to the 1986 data tape to provide estimates of fringe benefits received. The resulting amounts provided the basic data with which to distribute employer-related noncash health benefits. The program we used to estimate the precise amounts received by each household was a modified version of that used by Smeeding *et al* (forthcoming). However, we adjusted the average amount of benefit received per recipient household to equal that estimated by the US Bureau of the Census for 1986 (see US Bureau of the Census, 1992). The methodology used by the Bureau to estimate employment-related noncash health benefits is consistent with the methodology of the present study, and is also similar to the approach employed by Smeeding (forthcoming).

Education

The data we used to estimate per pupil expenditures by level of education and relevant participation rates by age group were obtained from the Statistical Abstract of the United States (US Bureau of the Census, 1992b). The yearbook

contained all the data on expenditures by level of education, pupil numbers, and drop-out rates necessary to impute noncash education incomes to households. The LIS data tape also includes information on the labour force participation of individuals aged 15 and older. We used this data (rather than overall drop-out rates) to allocate expenditures to pupils above compulsory school age.

Housing

The US Bureau of the Census reports (US Bureau of the Census, 1987; 1992) include estimates of noncash incomes in the form of rent subsidies for beneficiaries of public housing programmes. These are measured as the difference between the (unsubsidised) market rent and the actual (subsidised) rent paid (see US Bureau of the Census, 1992). The approach is therefore consistent with our `preferred' approach outlined in Appendix Five. Noncash housing incomes for public renters, estimated in this way, is included in the LIS 1986 dataset.

In the case of owner-occupiers, we used data on the average (mean) level of imputed income by household type, age of household head and gross income quintile from the LIS United States 1979 dataset. The estimates included in the 1979 dataset were derived using the same methods as our `preferred approach'. We applied the estimates derived from the 1979 data to households in the 1986 dataset, then adjusted the amounts such that the mean level of imputed income for all owner-occupier households was the same as that estimated for 1986 by the US Bureau of the Census (1992). The Bureau uses a `rate of return on housing equity' approach to measure imputed income which is consistent with our methodology.

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